

WOMEN IN STATE LEGISLATURES:  
REPRESENTATION AND THE POLICY PROCESS

by

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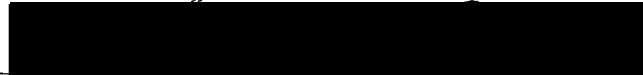
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Women in State Legislatures: Representation and the Policy Process

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### ABSTRACT

Women have not achieved equality in regards to political representation within the US. This exclusion weakens the quality of the political debate and destabilizes the legitimacy of our democracy. However, inroads have been made in building a more representative democracy at both the state and federal level in the US. This study extends the literature regarding gender and representation, exploring the association between descriptive representation, legislative factors, civil society contexts and the substantive representation of women.

The quantitative research design employed in this study was adapted from a model proposed by Beckwith and Cowell-Meyers, rooted in the theory of representation as developed by Hanna Pitkin. The model analyzes substantive representation as a function of descriptive representation, legislative factors, and civil society contexts. The dependent variable, substantive representation, is measured at three different stages of the policy process: bill sponsorship, roll-call voting, and policy outputs. Data were collected for all 50 states for two time periods and across 25 states for two additional time periods. This resulted in a comprehensive and original panel dataset measuring substantive representation of women at three different stages of the policy process at four different time periods,  $n = 150$ . The data were analyzed using fixed effects analysis.

The results reveal that the theoretical model did not significantly predict the variance of the substantive representation of women at any stage of the policy process. These insignificant results are significant in that this model is the first of its kind to test the hypotheses using comparative state-level data. Insignificant results provide room for analysis investigating alternative measurement of key variables, inclusion of alternative hypotheses, as well as consideration of alternative causal models.

Future research should challenge key assumptions commonly found in the literature. This includes the assumption that women unilaterally act for women. The new question should be who acts for women? In addition, scholars must not make a priori

assumptions of substantive representation. Rather, the construct must be analyzed respective of geographical, temporal, and ideological variation of women. Future research should challenge the classic definition of substantive representation, as well as the common tools for measuring substantive representation.

This abstract accurately represents the content of the candidate's thesis. I recommend its publication.

Signed

  
Mary E. Guy

## DEDICATION

To Matthew, my love.

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## CHAPTER ONE:

### INTRODUCTION

*We need not suppose that when power resides in an exclusive class, that class will knowingly and deliberately sacrifice the other classes to themselves: it suffices that, in the absence of its natural defenders, the interest of the excluded is always in danger of being overlooked: and, when looked at, is seen with very different eyes from those of the persons whom it directly concerns.*

- John Stuart Mill

*There never will be complete equality until women themselves help to make laws and elect lawmakers.*

- Susan B. Anthony

#### Overview

Women have not achieved equality in regards to political representation within the United States. This exclusion weakens the quality of the political debate and destabilizes the legitimacy of our democracy (Mansbridge, 1999). Inroads have been made in building a more representative democracy at both the state and federal level in the US, but parity is still a distant spot on the horizon. For example, the number of women holding office within the United States has steadily increased at the state and federal level since the 1970's. In 1975, only 9% of those holding office in the lower chamber of state legislatures were women, but today nearly 25% of the seats are held by women. This number is lower at the federal level where, currently, 16.5% of the seats of the House of Representatives are held by women. Comparatively, the US ranks far lower in female political representation than any

other industrialized country (CAWP, 2011a).

Women have advocated for political representation in the US for over a century, arguing that political representation will result in public policy that reflects women's rights and interests (Sanbonmatsu, 2003; Swers, 2002a; Thomas, 1994). From the late 1960's, scholars have focused on analyzing the impact of female political representation within the US and internationally (Hawkesworth, 1994), and, since then, the study of female representation in political bodies has produced a significant collection of empirical and theoretical literature (Lovenduski, 2005b; Phillips, 1995; Sapiro, 1981).

Research within this vein is concerned with investigating the interaction of gender, the state, and policy, where gender is "...a way of referring to the social organization of the relationship between the sexes" and also as "a primary way of signifying power" (Scott, 1986, p. 1053). Introduction of gender into the analysis of politics and public policy highlights an awareness of inequality based on biological differences perpetuated through policies created by the state (Mazur, 2002).

Theory and research concerning gender, politics and policy often encompass questions relating to representation. Representation is a measure of democracy, and the US was founded upon the values of "popular representation and governance" (deLeon, 1997, p. 1). The exploration of gender, representation and democracy is important considering the relevance of the constructs within US history and within the academy. As stated by Reingold (2000):

Women's presence in such positions of power confirms and upholds cherished democratic ideals of equal and full participation of all citizens. It affirms the openness and thus the legitimacy of our democratic system by demonstrating that access to positions of power and influence in public affairs are available to all, no matter what their gender, race, class, national origin, or other attributes. (p.32)

Representation of women and normative concepts of democracy were first united by the 2<sup>nd</sup> wave of the US feminist movement when activists began to advocate for gender equality of women within political life. At the same time, normative arguments began to appear claiming that gender equality in political institutions is a gauge of justice and democracy. Since then, large international and transnational organizations such as the United Nations, European Union, Summit of Americas, and the Association of Southeast Asian Nations have declared that an increase in the political representation of women would lead to a truly representative democracy and greater economic and social progress (Htun, 2004).

As discussed by Phillips (1995), equal representation leads to a shift from the "politics of ideas" to that of "politics of presence." The "politics of presence" places a diverse, representative group of individuals within the policymaking process where deliberative discourse can lead to advocacy for a wide range of interests and goals.

Research questions relating to representation are commonly based upon the work of Hanna Pitkin (1967). Pitkin's text, *The Concept of Representation*, has informed research concerning female representation and public policy, and this



framework has become foundational in research exploring gender and representation (Schwindt-Bayer & Mishler, 2005).

In her classic text, Pitkin established four types of representation: descriptive, formal, substantive, and symbolic representation. The causal link between descriptive and substantive representation is the most commonly researched link among the four types of representation (Schwindt-Bayer & Mishler, 2005), and it is the focus of this study. Descriptive representation is “being typical, or resembling” (p. 90), and is based on demographic characteristics. Descriptive representation is secured when the representative group is an approximation of the population at large. Substantive representation is the statement of the goals and interests of a group represented by the individual. Pitkin defines substantive representation “...as an acting for others, an activity on behalf of, in the interest of, as the agent of, someone else” (p.113). Gerrity, Osborn and Morehous Mendez (2007) claim

...if descriptive representation translates into substantive representation, women’s current descriptive underrepresentation in legislatures in the United States can result in a lack of substantive policy that address the unique concerns of women, such as women’s health, child care, and the workplace. (p.179)

Thus, it is important to understand the context in which descriptive representation translates to substantive representation as a matter of democracy and equality.

#### Problem Statement

Research has not yet established the specific mechanisms that result in a translation of descriptive representation to substantive representation of women

(Beckwith & Cowell-Meyers, 2007). Compelling studies point to the influence of a lone individual, the policy entrepreneur (S. Carroll, 1984; Chaney, 2006; Childs & Krook, 2005). Others argue that a critical mass of women is necessary to enact change (Bratton, 2005). Based upon the work of Rosabeth Moss Kanter (1977a, 1977b), the debate within the literature focuses on the point at which a group of women is large enough to create change. Opinions and research vary on what percentage is necessary to bring about substantive representation, with the critical mass ranging from 15% to 30% (Beckwith & Cowell-Meyers, 2007; Childs & Krook, 2005).

Others argue that it is overly simplistic to simply review the percentage of woman in a representative body without considering the institutional and societal contexts that may play a large role in the substantive representation of women (Childs & Krook, 2005; Lovenduski, 2005a; Weldon, 2002). For example, Beckwith and Cowell-Meyers (2007) argue that in comparative research both parliamentary factors and the civil society contexts impact substantive representation, in addition to descriptive representation. Historically, the dominant group has not consisted of women or other minority populations yet policy advancements have been made for groups other than the majority party. Therefore, it can be theorized that certain elements within political institutions and civil society also influence substantive representation of women (Beckwith & Cowell-Meyers, 2007; Weldon, 2002).

Additional research is necessary to understand the mechanisms that result in the substantive representation of women. Despite the extensive body of research, scholars have yet to comprehensively explore the relationship between descriptive and substantive with specific consideration to institutional and societal contexts. This study fills a gap in the research by analyzing a comprehensive model of descriptive and substantive representation across all 50 states for two time periods, and across 25 states for an additional two time periods.

### Purpose

The research question guiding this study is as follows:

What is the impact of descriptive representation of women, legislative factors, and societal contexts on the substantive representation of women at three different stages of the policy process, within the US states?

First, this study addresses the following question by exploring how descriptive representation, legislative factors, and societal contexts impact substantive representation. Second, this study examines how this impact varies at different stages of the policy process. The hypotheses are as follows:

H<sub>1</sub>: State legislatures that have more female legislators will have higher rates of substantive representation of women.

H<sub>2</sub>: State legislatures that have a greater Democratic majority will have higher rates of substantive representation of women.

H<sub>3</sub>: State legislatures that have a women's caucus will have higher rates of substantive representation of women.

H<sub>4</sub>: States that have a more liberal citizen ideology will have higher rates of substantive representation of women.

H<sub>5</sub>: States that have a more liberal gender opportunity structure will have higher rates of substantive representation of women.

Detailed information relating to the research question and hypotheses is included in Chapters Two and Three.

### Methodology

This study focused on all 50 US states for two periods of time, 1995 and 2005, and 25 states for two additional periods of time 1975 and 1985. Analysis for the years 1975 and 1985 were limited to 25 states due to the availability of data. The research design utilized panel data analysis in order to explore how each of the independent variables contributes to the variance in each of the dependent variables. The unit of analysis within this research design is the general session within the lower chamber of the state legislature.

Data collection resulted in an original dataset with three dependent variables and five independent variables. The three quantitative models were based on each of the three dependent variables, measuring the unique impact of the combination of predictor variables on each dependent variable. The data were analyzed using panel data analysis to determine if descriptive representation, political party influence, women's caucus, citizen ideology and gender opportunity structure predict the variance in substantive representation of women.

## Significance

This research design addresses three significant gaps within the literature regarding the unit of analysis, the theoretical model, and sampling. The research question and hypotheses supplement current research by investigating similar questions with new data and research methods. As a result, the significance of this study is largely empirical in nature.

Research on gender and representation often focuses on the individual as the unit of analysis, closely reviewing how individual traits and characteristics impact substantive representation. Those that study gender and policy have begun to note that the context in which policy is made also matters (Cammisa & Reingold, 2004). The substantive representation of women is subject to a variety of influences such as the legislative body as a whole, or external political factors. In order to examine these influences one must also analyze relationships at the macro level. Research at the aggregate level is not as commonly studied as micro-level analysis focusing on the individual (Bratton, 2005; Cammisa & Reingold, 2004; Reingold, 2008). Application of the theoretical model posed by Beckwith and Cowell-Meyers (2007) addresses these gaps in the literature, requiring a macro-level unit of the analysis as well as the inclusion of variables regarding political and social contexts.

Current analysis of gender, policy and representation within the US is limited. It wasn't until 1992, or the Year of the Woman, when enough women filled the seats of Congress to justify analysis of representation of women (Swers, 2002). At the

state level women have filled representative positions in greater numbers. However, analysis typically focuses on a small sample of six to twelve states. This research design contributes to the literature by extending analysis to all 50 states. Pursuing this research design required the development of a new dataset, including a comprehensive coding of women's interest legislation across all 50 states for two periods of time and 25 states for an additional two time periods. A similar dataset does not exist and offers the opportunity to explore uncharted territory in regards to the research question and hypotheses, as well as a myriad of other research questions that have yet to be answered. These unanswered questions are directly related to gender, policy and representation and are a matter of concern for gender equality and democracy.

### Organization of Study

This study is organized in a standard fashion. Chapter One provides an introduction to the topic and an overview of the study. Chapter Two offers a review of relevant literature, which has been organized according to the dependent and independent variables. Chapter Three reviews the methodology including a recap of the guiding research question and hypotheses, operationalization of variables and data collection procedures for each variable, and a review of panel data analysis, regression diagnostics, and the limitations of the research design. Chapter Four describes the results of the descriptive analysis, as well as the panel data analysis.

Chapter Five concludes with a thorough discussion of the statistical results, including theoretical implications and a future research agenda.

## CHAPTER TWO:

### REVIEW OF LITERATURE

This chapter provides a summary of the literature regarding gender, representation and the policy process. The first section reviews Pitkin's theoretical framework along with common critiques of the framework. The second section outlines the conceptual framework, summarizing research and literature regarding each of the independent and dependent variables. Each sub-section will end with the related hypothesis. The third section offers a critical analysis of existing literature, highlighting the gaps in the research and the ways in which the current research design endeavors to address these issues.

#### Theoretical Framework: The Concept of Representation

##### *Representation, Broadly*

Hanna Pitkin's work offers a theoretical framework for political representation. Current and historical research concerning gender, representation, and public policy relies heavily on this theoretical foundation (Beckwith & Cowell-Meyers, 2007; Lovenduski, 2005b; Schwindt-Bayer & Mishler, 2005; Simon Rosenthal, 1995). In her classic text, Pitkin established four types of representation: formal, symbolic, descriptive, and substantive representation. Formal representation refers to the processes of authorization and accountability in which an individual "stands for" another. Specifically, formal representation is not concerned with the



action of representing, or even the qualifications or characteristics of a suitable representative. Instead, formal representation is the process in which one becomes a representative. In the United States, this is typically achieved through the election process. *Authorization* of a representative occurs when they are elected to office, and a representative is *accountable* to constituents due to the fact that they are required to seek re-election. Formal representation does not concern itself with what occurs after the fact; to be elected is to represent (Pitkin, 1967).

The second type is symbolic representation. Pitkin (1967) explains that symbolic representation is the extent to which a representative stands as a symbol of the constituency. Popular examples include the British monarchy, the Catholic Pope, or transformational heads of state. While a representative may be accepted as a leader and may act for the constituency, it does not mean that the constituency will believe that the representative is a symbol of the nation. Symbolic representation is ultimately concerned with how the representative is perceived and evaluated (Schwindt-Bayer & Mishler, 2005), and the feelings this evokes from constituents (Dovi, 2007). The ultimate question is: Do women feel like they are represented (Dovi, 2007)?

Descriptive representation is “being typical, or resembling” or “standing for” and is based on socio-demographic characteristics (Pitkin, 1967, p. 90, p. 60). Descriptive representation is realized when the representative group is a reflection of the population at large. As Pitkin explains, descriptive representation does not

concern the actions or motivations of the representative, but simply their socio-demographic characteristics (Pitkin, 1967). A person's DNA ensures that they have a unique genetic makeup offering hundreds, if not thousands, of characteristics that one may be represented by. In addition, one may also be represented according to social location – spatial, temporal, and economic. This results in an array of socio-demographic characteristics from which one can be descriptively represented.

The study of representation and the policy process focuses almost exclusively on politicized socio-demographic variables. For example, research and theory regarding representation does not focus on a group of tall individuals or short individuals, or on whether one is right-handed, or left. Descriptive representation focuses on physical ability, race and ethnicity, sexuality, and gender, to name a few. These are socio-demographic characteristics that, when grouped together, typically result in a substantial difference in social and economic position. They are considered political because differences in social and economic position result in differing interests and needs with and between groups (Sapiro, 1981).

Thus far, a review of Pitkin's "types" of representation has illustrated how an individual becomes a representative through the process of authorization and accountability, such as formal representation. Symbolic and descriptive representation refers to types of representation that occur passively through the ways in which a representative is a symbol of the nation, or through the ways in which a representative reflects the composition of constituents based on socio-demographic

characteristics. The final category, substantive representation, focuses on the activity of representing.

Substantive representation is the statement of the goals and interests of any given group represented by the individual. Pitkin defines substantive representation “...as an acting for others, an activity on behalf of, in the interest of, as the agent of, someone else” (p.113). This includes the constituency as a whole or sub-groups divided by race, class, gender, or sexuality, to name a few. An example of the substantive representation of women is health policy requiring health insurance companies to cover mammograms. Another clear example is legislation defining women’s rights to breastfeed their children in public.

The causal link between descriptive and substantive representation is the most commonly researched link amongst the four types of representation (Schwindt-Bayer & Mishler, 2005). For the purposes of this research design, the focus remains exclusively on the link between descriptive and substantive representation. Described succinctly, descriptive representation is “standing for” women where substantive representation is “acting for” women. Reingold (1992) asks the pertinent question, “Are these women in public office merely women who represent, or are they also women who represent women?” (p. 509). This is directly related to the purpose of this study and the stated research question. The next section, Competing Arguments, details the literature critiquing the study of descriptive and substantive representation.

### *Competing Arguments*

Research concerning the link between descriptive and substantive representation has been criticized on two main points. First, there is an assumption that there is a direct and positive correlation between descriptive and substantive representation. Consequently, it is assumed that an increase in descriptive representation will result in a subsequent increase in substantive representation (Beckwith & Cowell-Meyers, 2007; Reingold, 2008). This limiting assumption may camouflage other dynamics at play, resulting in erroneous conclusions.

As many have noted, an increase in the number of women in office doesn't always directly relate to an increase in the number of bills and acts related to women's interest legislation (Childs & Krook, 2005; Mackay, 2004). Research suggests that a smaller minority, or even a token few, may be more effective in pursuing a pro-women agenda (Carrol, 1984, Chaney, 2006, Childs & Krook, 2005). In fact, some wonder if, by increasing the number of women in office, women no longer feel obligated to act for women. Or, alternatively, it is speculated that the increase in representation may result in an altered environment less supportive of a women-friendly agenda, or even an environment that motivates men and women to actively work against women's interest legislation (Beckwith & Cowell-Meyers, 2007; Bratton, 2002; Childs & Krook, 2007). Lastly, the intense focus on the relationship between descriptive and substantive representation often results in a failure to investigate how the increase in diversity changes the behavior of all

representatives, not just women or other minority groups (Bratton, 2002; Cammisa & Reingold, 2004). As Weldon (2002) notes, it is time for scholars to move beyond the body count.

As declared by Weldon (2002) and reiterated by others, it is time for scholars to move beyond the a simple model exploring the results of an increase in descriptive representation (Childs & Krook, 2005; Lovenduski, 2005a). Cammisa and Reingold (2004) state “Few studies have considered the potential impact of contextual forces other than critical mass on the behavior and attitudes of female state legislators” (p. 198). Cammisa and Reingold continue stating that scholars should expand the literature by integrating the concept of the political opportunity structure such as developed by McAdams (1982), as opposed to current scholarship that simply incorporates political and environmental variables as controls.

This sentiment is echoed by Beckwith and Cowell-Meyers (2007). Beckwith and Cowell-Meyers (2007) note that current research continues to produce conflicting results regarding the relationship between descriptive and substantive representation of women. Based on existing literature, the authors argue that there are significant parliamentary factors and civil society contexts that shape substantive representation in addition to, and including, descriptive representation. As stated by the authors, “What numbers, frameworks, conditions, and contexts govern the ability of women legislators to make a difference?” (p. 554). This question is important because it

moves beyond descriptive representation to include the political context of the policy process.

The second critique regards the definition and operationalization of substantive representation. Recall that substantive representation is defined as acting for the group as a representative. Within the literature regarding gender, this is often synonymous with feminism and the women's movement. However, as many point out, women as a group are not homogeneous (Bratton, 2002), and the study of substantive representation must be conducted carefully to avoid essentialism.

Essentialism is eloquently defined by Mansbridge (2003):

Essentialism includes assuming a single or essential trait, or nature, that binds every member of a descriptive group together, giving them common interests that, in the most extreme versions of the idea, transcends the interests that divide them. Such assumptions lead not only to refusing to recognize major lines of cleavage in a group, but also to assimilating minority or subordinate interests in those of the dominant group without ever recognizing their existence. (p. 637)

As such, it is possible to understand how the representation of some groups of women may come with negative tradeoffs for other groups of women (Dovi, 2007; Young, 1999), or even how women's interest legislation may continue to bestow benefits on sub-groups of women at the expense of others (Dovi, 2007). One should not erroneously assume that all women will uniformly advocate for a standardized slate of women's interest legislation (Ferguson, 1984; Mansbridge, 2003). In fact, women come to office with a wide variety of political goals and interests, not all of which

nicely dovetail with the typical notion of feminism and the women's rights movement.

Despite this, research clearly demonstrates that women do have divergent interests from men (Mansbridge, 1999; Phillips, 1995; Sapiro, 1981). Because women have historically been excluded from the policy process, women's policy priorities, largely ignored, are relatively new to the policy agenda (Swers, 2002b). As stated by Mansbridge (2005), "Descriptive representation by gender improves substantive representation for women in every polity for which we have a measure" (p. 622). Consequently, it has been and continues to be relevant to examine how the descriptive representation of women translates to substantive representation.

The pool of literature describing, analyzing, and advocating for the descriptive and substantive representation of women is quite large and has certainly been advanced since the first studies of its kind in the late 1960's (e.g. Werner, 1966, 1968). The arguments summarized in this section do not limit the utility of descriptive and substantive representation. In fact, these arguments introduce cogent points that should be integrated into the literature. Additional research is necessary to explore the relationship between descriptive and substantive representation, integrating specific legislative factors and societal contexts that may result in the substantive representation. The following section, Conceptual Framework, reviews the literature as it relates to an adaption of Beckwith and Cowell-Meyer's (2007) model, briefly reviewed in the first chapter.

## Conceptual Framework

The Conceptual Framework section explores the model used in this research design. The first section explores the original model and the authors' arguments for expanding research on descriptive and substantive representation. The following three sections, Representation of Women, Legislative Factors and Societal Contexts, will give the reader an overview of the research exploring the constructs, including use of the constructs as dependent and independent variables, common definitions and operationalization of these variables, and the related hypotheses. The section will conclude with a brief synthesis of the literature and an introduction to the final section of the literature review.

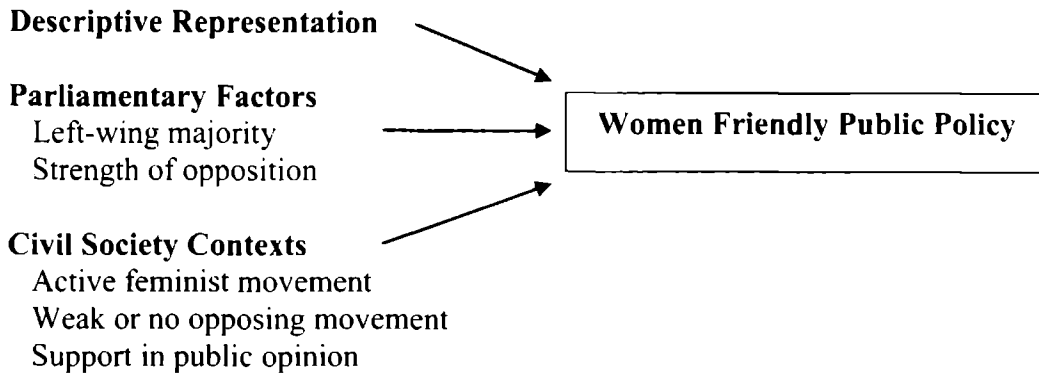
### *The Model*

In 2007, Beckwith and Cowell-Meyers published a persuasive article critiquing the limitations of current research. Similar to the arguments posed above, the scholars were concerned with the simplistic focus on descriptive representation. The authors argued that the political context is the “necessary condition for translating sheer numbers of women into women-friendly public policy” (p. 557). The authors then divided the political context into parliamentary and civil society contexts. The parliamentary context is concerned with party control of government. Beckwith and Cowell-Meyers argue that liberal or leftwing political agendas typically coincide with advancing women's issues. Civil society context encompasses the



strength of the women's movement and public opinion concerning women's rights.

Figure 2.1 offers a depiction of Beckwith and Cowell-Meyer's model.



**Figure 2.1. BECKWITH AND COWELL-MEYERS' THEORETICAL MODEL.**

Beckwith and Cowell-Meyer's model is designed to be comparative in nature, thus explanatory variables included within their model are appropriate for exploring representation across many countries. However, this does not eliminate the utility of the model within the United States. In fact, Beckwith and Cowell-Meyer's model provides a sound foundation in which to develop a similar model based on US state legislatures. The revised model will be a unique contribution to the literature focusing on female political representation within US state legislatures. The following three sections provide further review of Beckwith and Cowell-Meyers model offering the state of current research and application of said model within study of US state policymaking.

## *The Representation of Women*

### *Substantive Representation*

Recall that substantive representation is the statement of the goals and interests of a particular group, in this case women. In this study substantive representation is the dependent variable, and is defined as acting for women in legislative bodies through the expression of the goals and interests of women (Mazur, 2002). As mentioned earlier, within the academic literature the definition of ‘feminist’ or ‘women-focused’ is a widely contested topic, and is often a point of heated debate. This is evident when reviewing the range of definitions for feminist or women-focused public policy (Beckwith & Cowell-Meyers, 2007; Mazur, 2002). Common definitions include policies that mitigate or ameliorate gender-based discrimination (Bratton, 2002); policies focused on women for either biological or socially constructed reasons (Lovenduski, 2001); and, policies that target women based on traditional roles as caregivers or other gendered divisions of labor (Swers, 2002a). Concrete examples of policies within the US that meet many of these definitions include reproductive policy, policies concerning violence against women, and family leave policies, to name a few.

Based on the wide range of definitions, use of the term feminist and women-focused must be used carefully and deliberatively to avoid an essentialist view of women’s interests. Kathleen Bratton (2002) names this type of policy “women’s interest legislation” stating, “women’s interest legislation is defined as legislation that

would decrease discrimination or counter the effects of discrimination or would improve the social, economic, or political status of women” (p. 135). This iteration offers a definition specifically focused on gender equality while broad enough to encompass the varying needs of an intersectional group of women as found in the US. Due to this, substantive representation will be used synonymously with women’s interest legislation, as defined by Bratton.

This definition of substantive representation was selected because it is found to be comprehensive and non-essentializing, thus representative of a diverse group of women with a varied array of policy interests. At this point, as previously discussed, it is necessary to note that women as a group are not homogenous, but, in fact, have varying interests and priorities related to socio-demographic characteristics other than gender. This varies according to race and ethnicity, sexuality, political and spiritual affiliation, and economic status, to name a few. However, it is also commonly agreed upon that, for the purpose of analysis, women as a group have a set of priorities that are different from those of men or other groups based on socio-demographic characteristics (Schwindt-Bayer & Mishler, 2005). These priorities have often been neglected and ignored, and the US lags behind most other industrialized nations in providing policy benefits that work to eliminate discrimination or advance women’s policy priorities.

Bratton (2002) divides substantive representation into two sub-constructs related to the legislative process: policy priorities and policy preferences. This

typology is useful and will be utilized in this study. Policy priorities, also referred to as agenda setting, typically includes actions such as floor remarks (Shogan, 2001; Walsh, 2002), bill sponsorship (Reingold, 2000; Swers, 2002a; Thomas, 1991; Vega & Firestone, 1995), and committee membership (Swers, 2000; Tamerius, 1995).

*Policy priorities.* Bill sponsorship is the first example of the expression of policy priorities. Wolbrecht (2002) states that bill sponsorship "... provides a useful indication of members' interest in, commitment to, and preferences over women's rights... members (co)sponsor legislation with policy outcomes they prefer to the status quo" (p. 177). Bratton and Haynie's (1999) study of women's bill sponsorship offers an excellent example of analysis of female representatives and the policy process. The authors conducted a quantitative, longitudinal analysis of agenda setting, operationalized as bill sponsorship. This was done for three periods in time: 1969, 1979, and 1989 for five different state legislatures chosen for their range in ideology and levels of representation of both women and racial minorities. Using negative binomial regression analysis the authors determined that both race and gender have a distinct and significant impact on policy priorities,  $p \leq .01$ .

Action within committees also falls within the sub-construct policy priorities. Scholars have determined that women's representation on committees has an impact on the functioning of the committee as well as the outputs of the committee (Rosenthal, 1997; Swers, 2002b). For example, it has been determined that women lead committees with a leadership style focused on consensus and participation,

whereas men lead using a command and direct style (Jewell & Whicker, 1994). In addition, Kathlene (1994) determined that men and women use different communication patterns in committees. Specifically, men use aggressive communication through higher rates of interruption along with talking for longer periods of time. Most importantly, it has been determined that the presence of women, or lack thereof, impacts passage of legislation of direct concern to women (Berkman & O'Connor, 1993).

Lastly, floor debates are also a useful operationalization for policy priorities. In an analysis of transcribed floor debates in the House of Representatives, Walsh (2002) used analysis of variance to determine that women are significantly different in the amount of time they verbally represented women and other underrepresented constituencies, such as children or people living with HIV and AIDS, in the 104<sup>th</sup> Congress. In addition, Swers' (2002) analysis of floor remarks in the 103<sup>rd</sup> and 104<sup>th</sup> Congress found that Democratic women led the way in representing women.

Bill sponsorship, committee representation, and floor remarks, actively help set the policy agenda, thus substantively representing women, but each action has strengths and weaknesses. As stated by Swers (2002)

...depending on legislators' goals, their bill sponsorship patterns will reflect varying levels of commitment toward women's issues. An analysis of bill sponsorship is therefore a good first step toward determining which members are working to bring women's issues to the national agenda (p. 34).

As a result, among the potential measures of policy priorities, bill sponsorship is the most appropriate operationalization of policy priorities, and the first dependent variable discussed within this research design.

*Policy preferences.* For the purposes of this research design, policy preferences refers to roll-call voting, which, given the accessibility of data, is the most commonly researched behavior in the literature (Reingold, 2008). A great deal of literature exists concerning roll-call votes, and researchers have determined that there is a significant difference between men and women and voting behavior (Barrett, 1995; Day, 1994; Diamond, 1977; Dodson & Carroll, 1991; Dolan, 1998; Epstein, Niemi, & Powell, 2005; Swers, 2002a).

For example, Dolan (1998) conducted an Ordinary Least Squares regression on roll-call data at the federal level for the 103<sup>rd</sup> Congress and the 48 female elected officials. Dolan found that women are more likely to vote yes on women's issues than men. Dolan's results are typical for other analyses that focus on representation using roll-call data, though most studies typically focus on one policy area such as reproductive policy, as opposed to a spectrum of women's issues (e.g. Norton, 1999).

While roll-call voting is a common and appropriate operationalization of policy preferences, there are limitations to its utility. It has been determined that roll-call voting alone is a weak operationalization of substantive representation of women because it occurs after the policy agenda has been set (Hero & Tolbert, 1995; Lovenduski, 1998). Also, roll-call votes limit the representative to voicing preference

on a predetermined set of choices with a simple yea or nay (Bratton & Haynie, 1999). Yet, when studied in conjunction with other expressions of substantive representation throughout the policy process, such as bill sponsorship, one may develop a richer understanding of how descriptive representation, legislative factors, and societal contexts translate to substantive representation throughout the policy process.

Michele Swers (2002a) analyzed both bill sponsorship and roll-call voting behavior in the 103<sup>rd</sup> and 104<sup>th</sup> House of Representatives. In her analysis of bill sponsorship, Swers determined that women were more likely than men to sponsor bills related to women's issues, and at times this likelihood exceeded 50 percent. In addition, Swers also determined that women were more likely to vote for women's interest legislation. Specifically, Swers found that while Democratic men and Democratic women were as likely to cast a progressive vote on women's interest legislation, Republican women do defect from conservative ideology to vote liberally on women's interest legislation. However, this voting behavior ebbed once the Republican Party gained the majority. Swers theorized that the decrease in votes resulted from an increase of party pressure to toe the party line and maintain a majority on roll call votes.

Swers' (2002) analysis offers the most current and comprehensive view of the impact of descriptive representation on policy priorities and policy preferences. Despite this, Swers does not analyze the impact of descriptive representation on policy outputs, which, arguably, is the goal of both the women's movement and of

scholars analyzing representation of women. In addition, Swers' analysis, like Dolan's, is limited to the federal level. While fruitful, a similar analysis at the state level would be beneficial and may have the potential to reveal new and exciting results, due to the fact that women have consistently had greater representation at the state level (Thomas, 1994). The next section, Policy Outputs, discusses the literature focusing on women's interest legislation emerging from one or both legislative chambers and/or becoming law.

*Policy outputs.* Policy outputs refers to the number of women-interest bills passed by a chamber or enacted into law. Research at the aggregate level exploring the relationship between descriptive representation and aggregate policy outcomes is not as commonly studied as micro-level analysis focusing on the individual (Bratton, 2005; Cammisa & Reingold, 2004; Reingold, 2008). In addition, quantitative and qualitative research produces mixed results concerning the relationship between descriptive representation of women and aggregate policy outcomes (Reingold, 2008). Quantitative research designs often provide statistically significant evidence of support for the relationship between descriptive representation and policy outputs (Crowley, 2004; Reingold & Schneider, 2001); yet, results are not always conclusive (Thomas, 1994; Tolbert & Steuernagel, 2001). In contrast, qualitative research consistently provides evidence that there is a relationship between descriptive representation of women and policy outputs (Dodson, 2006; Hawkesworth, Casey,



Jenkins, & Kleeman, 2001). Due to these conflicting results, further analysis is necessary. Reingold (2008) states:

Clearly, more research on aggregate policy outcomes is needed – not only because of the mixed results produced thus far but also because this type of research has been neglected for far too long. We cannot simply assume that being different and acting differently assures that women will, in fact, make a difference. (p. 132)

Thus, consideration of policy outputs is of benefit to the field and would also fill a gap in the literature.

In conclusion, this research design will encompass three dependent variables: policy priorities, policy preferences, and policy outputs. These variables will be used to measure substantive representation. The selection of these three variables results in a comprehensive analysis meant to encompass key stages within the policy process. The relevance of analyzing substantive representation across different stages of the policy process will be reviewed in the next section.

### *The Policy Process*

Harold Lasswell (1956) introduced the concept of the stages of the policy process as a tool to understand interactions between actors, forces, and institutions, as well as a tool to bring science to the study of public policy in the “real world” (Jann & Wegrich, 2007). Many scholars contributed to this stream of research with their own version of the policy process, such as Anderson (1975), Jenkins (1978), May and Wildavsky (1979), and Brewer and deLeon (1983). Also referred to as the stages heuristic, it was the main focus of the policy sciences for many decades, into the late

1980's (deLeon, 1999). Currently, it is the most widely applied framework of the policy process (Jann & Wegrich, 2007).

An empirical and theoretical focus on the stages heuristic is a “means for categorizing policy actions as they vary from stage to stage” (deLeon, 1999, p. 26). An advantage of using the stages heuristic is that it provides an intuitive and practical means in which to study policy by categorizing policy actions from stage to stage. In addition, the stages heuristic serves as a means for breaking down a complicated cycle into more easily synthesized pieces.

Critics of the stages heuristic claim that use of the model results in research focusing on one stage of the process, painting a picture that fails to tell the entire story. In addition, amongst other critiques, the stages heuristic is lambasted for its lack of predictive capabilities (Sabatier, 1999). However, as proponents counter, the stages heuristic was never meant to be a predictive theory, but “...a device to help disaggregate an otherwise seamless web of public policy transactions...” (deLeon, 1999, p. 24). The utility of the stages heuristic is described by deLeon as “....a basis for viewing and categorizing actors and actions in ways that help unravel and elucidate given policies...” (p. 26), where each stage is “distinguished by differentiated actions and purposes” (p. 24).

Brewer and deLeon's (1983) stages include Initiation, Estimation, Selection, Implementation, Evaluation, and Termination. The use of the stages heuristic as an operational tool, categorizing different actions throughout the policy process, is useful

within this study. Specifically, this study focuses on substantive representation of women throughout the policy process. As detailed above, policy priorities, policy preferences, and policy outputs are all ways in which women can be substantively represented. They also encompass specific stages of the policy process.

Policy preferences fall within the Initiation or agenda-setting stage of the policy process. Expression of policy priorities occurs during the Estimation stage where representatives' values are on show through hearings, debates, and roll-call voting in committees and on the floor. Policy outputs are encompassed by the Selection stage of the policy process. Selection is the legitimization of a policy through the formal process. It is important to look at substantive representation across different stages of the policy process because the elements affecting representation may vary from stage to stage (Soule & King, 2006).

It is theorized that support for a policy, in this case substantive representation of women, carries fewer consequences with less stringent rules earlier in the policy process (King, Cornwall, & Dahlin, 2005). In fact, it has been found that women are more often substantively represented at earlier stages of the policy process such as Initiation where problems are defined, the agenda is set, and bills are sponsored (Bratton, 2002; Tamerius, 1995). However, representation also occurs during Estimation and Selection, where policy preferences and policy outputs are expressed, respectively. As the process moves beyond Initiation and bill sponsorship the debate intensifies, the public may become aware of the proposal, and individual

accountability increases (Soule & King, 2006). This indicates that the substantive representation of women at later stages of the policy process will require more resources and political support. By designating activities related to the substantive representation of women by stage, one can demonstrate at what stages of the process women are substantively represented and where and when each independent variable is most influential.

The next section, Descriptive Representation, moves into a discussion of the first of five independent variables. It is followed with a discussion of legislative factors and societal contexts.

### *Descriptive Representation*

Descriptive representation is the primary independent variable of interest in this study. Descriptive representation is based upon Pitkin's (1967) political theory where it is defined as "standing for" (p. 60). Application and analysis of descriptive representation often focuses on the concept of critical mass (Beckwith & Cowell-Meyers, 2007; Chaney, 2006; Childs & Krook, 2005; Lovenduski, 2001). The idea of critical mass is based upon the work of Rosabeth Moss Kanter (1977a, 1977b), where critical mass is also often referred to as the "tipping point" (Thomas, 1994; Weldon, 2002).

The portion of Kanter's work that has translated to the study of descriptive and substantive representation of women focuses on the power of a minority group to create change. Kanter defined groups based on the percentage of the total. For

example, a uniform group is composed of an entirely homogenous population. In the instance where the population isn't homogeneous, but, in fact, contains a small minority group, the group is considered skewed. Skewed organizations have a minority population that is less than 15% of the total. In a skewed group the dominant population will control the dynamics, culture, and process of the group. The "tokens", or the underrepresented population, will have difficulty creating alliances and advancing their interests (Kanter, 1977b, p. 966). In addition, a skewed group runs the chance of tokenizing one individual as symbolic and representative of the entire group, as opposed to their status as one individual member of the group.

As the group proportions move toward equal distribution, it becomes tilted. At this point the minority population is 15% to 35% of the total. The group is considered balanced when the ratio of majority to minority nears 60:40 or 50:50. At this point the minority and majority may actually begin grouping into other subgroups that are not based on these "types." As a result, subgroups would no longer be exclusive to gender but based on some other defining characteristic.

After defining different types of groups based on proportion of minority populations, Kanter focused on the role of women in skewed organizations where the percentage of the total limits their ability to perform as anything but a token for the entire minority group. At the time of publication, Kanter was upfront about the theoretical nature of the numbers developed to indicate the type of organization – uniform, tilted, skewed or balanced. Kanter concluded stating that empirical,

quantitative analysis was needed in order to determine the exact point at which groups moved from uniform, to skewed, to tilted, and then to balanced.

Dahlerup (1988) was the first to attempt a quantitative threshold by researching women in Scandinavian politics. Dahlerup (1988) found that as the numbers of women increased, the substantive representation of women increased, but the author also discovered that some women were more effective because of their token status. Token status is typically defined as 15% or less of the total group (Kanter, 1977b). It was in this piece that Dahlerup established the threshold of 30% that has since been claimed by those studying descriptive and substantive representation as the “critical mass” necessary for women to coalesce as a group and enact change.

The connection between a critical mass of women and substantive representation has since provided mixed statistical results with few proving a direct causal relationship between a critical mass and substantive representation (Bratton, 2002; Kathlene, 1994; Saint-Germain, 1999; Thomas, 1991, 1994). For example, Thomas’s (1991) study of women’s bill sponsorship focused on the concept of critical mass. Thomas’ primary independent variable was the number of women in both chambers of state legislatures, which was then divided, according to critical mass theory, into three groups: less than 10%, 11-20%, and 20% and higher. Twelve states were selected based on their range of female representation and political culture. The author used a quantitative survey to collect information from state legislators during

the year 1988, and found that women are more likely than men to introduce bills related to women and children, but Thomas also determined that a critical mass of 30% - 35% was often not sufficient enough to impact the policy process. In fact, Thomas suggested that state legislatures must achieve a balanced distribution by gender in order to find a significant difference.

Bratton (2002) conducted a similar quantitative study. Bratton's longitudinal analysis was conducted in six states for three different periods in time, 1969, 1979, and 1989. Bratton found, similar to Thomas (1991, 1994), that women and blacks sponsor bills related to women and racial minorities in greater numbers than men or white representatives. In contrast to Thomas, Bratton determined that as time elapsed and the percentage of women and blacks increased, the overall sponsorship of bills did not increase, and in fact, sponsorship decreased in some scenarios. Bratton argued that as minority groups increased, the expression of a group's interests and goals did not increase in a linear fashion or according to the theory posited by critical mass theorists.

As demonstrated above, since Dahlerup's piece was published, a number of publications have investigated the merit of critical mass. It has since become evident that the 30% threshold was arbitrarily adopted and then implemented throughout the fields of political science and policy analysis. In addition, politicians and practitioners also adopted 30% as the magic number for representative groups. This occurred despite the thresholds established by Kanter or the admonitions of Dahlerup

herself, who actually theorized that critical *acts* were more important than the critical *mass* (Grey, 2006). Grey states:

...given there is nothing in Kanter's work to indicate that a single figure is all important, we need to move to the idea that different *critical masses* may be needed, depending on the outcome sought. Gaining 15% of the seats in a political body may allow female politicians to change the political agenda, but it may take proportions of 40% to have women-friendly policies introduced (p.494).

Debate within the literature reveals that the concept of critical mass is highly contested, and scholars vary on their opinions on how to measure descriptive representation. This is especially relevant within the US where representation of women at the state or federal level currently averages 24% and 16%, respectively (CAWP, 2011). It is difficult to test varying levels of critical mass when the percentage of women in elected office does not near a balanced ratio. Alternatively, it would be more fruitful to move away from the concept of critical mass and explore descriptive representation without grouping data into pre-defined groups. This allows for a focus on the relationship between descriptive and substantive representation at different stages of the policy process. As a result, the first hypothesis is as follows:

H<sub>1</sub>: State legislatures that have more female legislators will have higher rates of substantive representation of women.

This hypothesis contributes to the literature by opting to forego a measure of descriptive representation in terms of critical mass. It also contributes to the literature by testing the hypotheses with a much larger sample of state legislatures at different stages of the policy process. This may illustrate the need for different levels of



descriptive representation at different stages of the process. Lastly, this hypothesis represents a shift from the individual to the aggregate, to determine if descriptive representation at the macro level is related to the substantive representation of women.

The next two sections move beyond descriptive and substantive representation, to discuss the political contexts that may, either individually or in combination, result in substantive representation of women. Each section will begin with a brief discussion of Beckwith & Cowell-Meyers' model, followed by a review of complementary literature based on federal and state level research in the United States.

### *Legislative Factors*

This section focuses on the legislative factors that may be associated with substantive representation of women. Beckwith and Cowell-Meyers (2007) state that there is clear agreement that a leftwing political party is imperative to women's interest legislation, as is the political position of the leftwing party. The authors' discussion of parliamentary and civil society contexts is limited to variables relevant in comparative research. As a result, variables used by scholars studying the policy process within the US justify the analysis of additional or alternate variables that measure parliamentary and civil society contexts (Gerrity, et al., 2007; Gottfried & Reese, 2003; Weldon, 2002). In fact, a number of prominent researchers have also called for the inclusion of variables related to institutions when studying descriptive

and substantive representation (Cammisa & Reingold, 2004; Swers, 2000). A focus on institutional variables will be termed legislative factors.

Other legislative factors that appear within the literature regarding the US and state policymaking include a left-wing incumbency, party ideology, electoral systems, system vetoes, existence of a women's caucus, and the larger policy agenda of the majority party (Beckwith & Cowell-Meyers, 2007; Mazur, 2002; Swers, 2001; Weldon, 2002). The next two sections discuss the variables posed by Beckwith and Cowell-Meyer's model as well as other variables that are relevant based on a thorough review of the literature.

#### *Political Party Influence*

Beckwith and Cowell-Meyers (2007) assert that political ideology of the majority party is instrumental to the substantive representation of women. Specifically, the authors argue that the left-wing oriented political parties are often aligned with the goals and interests of women. As stated by Beckwith and Cowell-Meyers:

The presence of a leftwing party in parliament may not be a sufficient condition for advancing women's issues but, in general, leftwing parties have a better record than rightwing parties of initiation and supporting legislation liberalizing divorce, extending abortion rights, criminalizing violence against women, expanding employment opportunities, providing women's healthcare innovations, and advancing social welfare issues. (p. 557)

Thus, the authors theorize that a left-wing majority party offers a suitable context for the substantive representation of women. In order to apply this theory within the US, one must look at influence within a two-party system.

The idea that political parties are integral to democratic processes has been in existence since the first half of the 20<sup>th</sup> century (Aldrich, 1995; Schattschneider, 1942). Since then, party ideology has become a classic variable within public policy literature (Gabel & Huber, 2000), and it has been found to be a strong predictor of legislative behavior (Wiggins, Hamm, & Bell, 1992).

A collection of literature within the rational choice arena counters this argument (Downs, 1957; Mayhew, 1974). The rational choice philosophy argues that if a majority of the constituency favors a policy, members of both parties will act in favor of said policy in an effort to seek reelection (Burstein & Linton, 2002). Others contend that political parties play second fiddle next to a representative's individual policy preferences (Krehbiel, 1993).

Conversely, Wright and Schaffner (2002, p. 368) state that "bundles of issues" (p. 368), such as women's interest legislation, are aligned with specific political parties for purposes of political gain. The authors describe how the Democratic Party came to be aligned with civil rights when the New Deal mobilized working class "ethnics". As a counter political move, the Republican Party then appealed to disenchanted white Southerners that were against the newly adopted civil rights stance of the Democratic Party. This trend was also observed by Wolbrecht (2002)

who stated that in the 1950's and early 1960's the Republican Party was aligned with the women's rights agenda.

Today, polls and research show that the women's rights movement is currently aligned with the US Democratic Party. In fact, since 1968, women have identified with the Democratic Party in greater numbers than men, and since 1982 these differences have been found to be statistically significant even when controlling for age, race, and education. Lastly, women report a belief that the Democratic Party has a greater concern for women-related issues (McGlen & O'Connor, 1998).

Research regarding the intersection of gender, representation and political parties typically revolves around two competing theories. The first focuses on an oppositional perspective where the substantive representation of women comes at a cost to the political parties. Here women will act for women, regardless of their party affiliation and even at the cost of their party. Within this framework, scholars treat political parties as constraints, and typically include it as a control variable when modeling substantive representation (Sanbonmatsu, 2008b).

The second viewpoint theorizes that gender and party are in concert, where representatives act for women through the policy machinations of their party (Sanbonmatsu, 2008b). This perspective is especially relevant given the aforementioned alignment of the women's movement, women's rights, and the Democratic Party. Because the conception of women's rights and the viewpoint of the Democratic Party are harmonious, one would expect a positive relationship

between Democratic Party control and substantive representation. This research design supports this perspective. The second hypothesis is as follows:

H<sub>2</sub>: State legislatures that have a greater Democratic majority will have higher rates of substantive representation of women.

The inclusion of political party within the model offers the opportunity to advance the field by investigating the relationship between political party control and substantive representation (Sanbonmatsu, 2008b). The unit of analysis shifts from the individual level to the macro level with a focus on not just descriptive representation, but also the institutional and political forces at play within each state. Direct analysis of the relationship between political party and substantive representation is not as common within the literature and is a significant contribution to the literature (Cammisa & Reingold, 2004; Sanbonmatsu, 2008b). The next section discusses the second variable related to legislative factors.

### *Women's Caucus*

A formal women's caucus is a body within a state legislature that meets regularly to define policy goals and to create a political strategy in reaching those goals. The first state level women's legislative caucus formed in Maryland in 1969. Many early histories of state legislative caucuses claim that the impetus to organization was a direct result of a male super-majority in state legislatures, as well as discrimination and harassment many female legislators were experiencing in their state house (Mahoney, 2011).

As stated by Thomas (1991) “When a caucus bands together, the result is political clout -- a weapon with the potential to overcome skewed groups” (p. 973). As a result, scholars exploring the impact of women in representative positions also explore the impact of a women’s caucus on the substantive representation of women (Reingold, 1992; Thomas, 1991). The formation of a women’s caucus is a clear indication that the concerns and interests of women are distinct from those of men, and that gender is a politically relevant category. The women’s caucus is also another tool in which to advance women’s interest legislation (Mahoney, 2011). Carroll (2002) states “One of the most important intra-institutional factors [impacting substantive representation] seems to be whether women legislators met together either through a formal legislative caucus or as an informal group to discuss legislation that affects women” (p.18).

Further, establishing a women’s caucus serves to provide a means for coordination of women across chambers, and across parties. As the number of women grow in state legislatures it becomes increasingly important to organize and act for women in an effective fashion. Among other things, a women’s caucus serves this purpose (Kanthak & Krause, 2010).

Thomas (1991), using a quantitative survey, looked at 12 different state legislatures and found that the top five states passing women’s interest legislation also had a women’s caucus. Thomas concluded that a women’s caucus is a way for women to achieve clout. In a methodologically different analysis, Reingold (1992)

used interviews with state legislators from both Arizona and California. The author's interviews revealed that in the state with a formal women's caucus (California), female legislators viewed the caucus enthusiastically and as a way to put forth women-focused policy, as well as a means of voting as a unified group.

On the other hand, research exists that found the effect of a women's caucus on substantive representation to be inconclusive or ineffectual (Berkman & O'Connor, 1993; Reingold & Schneider, 2001). For example, Reingold and Schneider (2001) examined the influence of women within the context of abortion policy. In this study, women were found to be more effective in either passing or blocking legislation in their roles as committee members, rather than as a united women's caucus.

The small amount of contradictory research concerning substantive representation and women's legislative caucuses is a call for more analysis. Following the lead of Thomas (1991), this research design hypothesizes that the existence of a formal women's caucus will advance substantive representation of women. The third hypothesis states:

H<sub>3</sub>: State legislatures that have a women's caucus will have higher rates of substantive representation of women.

Analysis of the impact of women's caucuses in state legislatures is quite limited and few have studied the relationship between women's caucuses and substantive representation (Mahoney, 2011). This hypothesis seeks to extend the

literature by exploring the impact of a women's caucus within state legislatures across all 50 states for two time periods and for an additional two time periods for 25 states.

The literature also reveals several other legislative factors that may also impact substantive representation. Consideration of institutional norms, positional power in committees, and the degree of professionalism are just several recurring factors mentioned in the literature (Cammisa & Reingold, 2004; Childs & Krook, 2009). Consideration of the Executive branch may also be relevant, such as the influence of the bureaucracy and the governor on the policy process in state governments (Crew, 1995). Despite this, research within the field has not commonly incorporated these variables, and for the sake of creating a parsimonious research design, they will not be included. The following section, *Societal Contexts*, discusses variables outside of government institutions that may also impact substantive representation of women.

### *Societal Contexts*

Societal contexts also impact substantive representation of women. Weldon (2002) states that it is "problematic" to view representation solely as a function of individual policy preferences (p. 1153). Many policy and administration scholars argue that policy is a result of the influence of interest groups and of coalitions of governmental and nongovernmental parties (Sabatier, 1999; Sabatier & Jenkins-Smith, 1988; Teske, 2004; J. Q. Wilson, 1989), as well as the culture of the state (Snow, Rochford, Worden, & Benford, 1986). Therefore, it is also necessary to



consider extra-institutional sources of substantive representation (Cammisa & Reingold, 2004; Weldon, 2002). In this section research and theory considering societal contexts is discussed.

### *State Citizen Ideology*

Beckwith and Cowell-Meyers (2007) state that if the general public holds positive beliefs concerning women's issues this often results in the creation of a constructive environment for the substantive representation of women. Public opinion of women's rights has drastically changed over the past 40 years while descriptive and substantive representation has also shifted. The relationship between these constructs is worth exploring.

Leading policy scholars recognize that during the policy process the opinion of both policy elites and the public is critical to the adoption of public policy (Kingdon, 1995). Within the policy literature, a number of scholars have investigated the relationship between public opinion and public policy (Erikson, 1976; Miller & Stokes, 1963; Page & Shapiro, 1983; Page, Shapiro, & Dempsey, 1987), and most agree that there is a direct causal link between public opinion and a shift in public policy (Erikson, Wright, & McIver, 1993; Hartley & Russett, 1992; Miller & Stokes, 1963; Monroe, 1998; Wlezien, 2004).

In addition, as stated by Page and Shapiro (1983), "Responsiveness of government policy to citizens' preferences is a central concern in normative democratic theory" (p. 175). Democratic theory assumes that there is a direct

relationship between constituents and elected officials. Elected officials will act according to the interests and demands of their constituents, and constituents endorse or reject behavior through elections (Ansolabehere & Jones, 2010).

As a result, there is a general consensus concerning the impact of public opinion on public policy. The current gaps in the research concerning public opinion focus on the extent to which other legislative factors and civil society contexts such as interest groups, social movement organizations, political parties and political elites impact public policy, in addition to public opinion (Burstein, 2003). If they do have an impact, research also questions if the impact of public opinion is spurious in relation to these other variables (Burstein, 1998; Erikson, 1976). Others note that a model investigating the impact of interest organizations and political parties on public policy must always include public opinion, due to the belief that it undoubtedly increases the significance of the model (Burstein, 1998).

Public opinion is difficult to operationalize and measure, but with the advance of public opinion polls, archival data, and specific statistical techniques, the ability to capture a shift in public opinion, over time, has become possible (W. D. Berry, Ringquist, Fording, & Hanson, 1998, 2007a; Lax & Phillips, 2009). In regard to women's rights, Myra Ferree (1974) states that the question "If your party nominated a woman for President, would you vote for her if she seemed qualified for the job?" is a good measure of public opinion. Ferree makes the case that a yes or no response to this question is not actually a measure of voter choice, but a measure of the

respondent's prejudice. This measure has since been used to measure public opinion concerning women's rights (Burstein, 1985; Costain & Majstorovic, 1994; Schreiber, 1978; Welch & Sigelman, 1982). For example, Costain and Majstorovic (1994) used the question as a measure of public opinion in their analysis of women's rights legislation, which focused on both social movements and public opinion. Unfortunately, this data is limited to the national level, limiting its utility within this study.

In addition to Ferree's measure, Brace, Arceneaux, Johnson, and Ulig (2004) constructed a measure of gender attitudes. Using the General Social Survey, the authors pooled data to construct a cross-sectional measure of state-level gender attitudes. The measure utilized pooled data for the years 1974-1996, limited to states in which there was an adequate sample,  $n=38$ . Unfortunately, the nature of this measure does not capture temporal change, assuming public opinion remains stable over time (W. D. Berry, et al., 2007a; Lax & Phillips, 2009). Due to these limitations, this measure is also not appropriate for the proposed model, especially in consideration of public opinion and women's rights, which has changed dramatically over the past 40 years.

Ultimately, coordinated state-level polls necessary to create state samples across time regarding women's rights and roles in society do not exist. Alternatively, there has been a lively debate within the literature concerning the measurement of public opinion at the state level (W. D. Berry, et al., 2007a; W. D. Berry, Ringquist,

Fording, & Hanson, 2007b; Erikson, Wright, & McIver, 2007; Norrander, 2007). Of the options available, researchers can pool disaggregated state samples, derived from national polls, to create a cross-sectional measure (Arceneaux, 2001; Brace, et al., 2004; Erikson, et al., 1993), or researchers can use a proxy measure of public mood, or ideology, in order to operationalize public opinion (W. D. Berry, et al., 1998, 2007a; Norrander, 2007).

Berry, Ringquist, Fording and Hanson (1998) constructed just such a measure of public ideology using interest group roll-call voting scores, congressional election outcomes, partisan divisions of state legislatures, party of governor and a series of assumptions concerning political elites. This measure of citizen ideology offers longitudinal data available from 1960 to 2008 for all 50 states (Fording, 2009).

Scholars have determined that public ideology and public opinion concerning gender attitudes are strongly and significantly correlated (Arceneaux, 2001; Thomas, 1994). Literature discussing gender and representation commonly acknowledges that liberal political ideology is directly related to descriptive representation, or the number of women holding elected office (Arceneaux, 2001; Scola, 2006). As a result, most research focuses on the causal relationship between political ideology and descriptive representation (Norrander & Wilcox, 1998; Sanbonmatsu, 2002, 2003; Scola, 2006). Research incorporating political ideology as a measure of public opinion typically restricts analysis to domain specific policies, such as abortion policy (Arceneaux, 2001; Berkman & O'Connor, 1993). There remains a significant gap

within the research regarding citizen political ideology and the substantive representation of women. Scholars have recognized the need to include contextual factors such as public ideology when analyzing both descriptive and substantive representation (Cammisa & Reingold, 2004). The fourth hypothesis states:

H<sub>4</sub>: States that have a more liberal citizen ideology will have higher rates of substantive representation of women.

Inclusion of this variable within the research design fills a significant gap in the research. Current analysis has demonstrated that there is a direct link between a liberal citizen ideology and descriptive representation (Arceneaux, 2001; Scola, 2006). Existing research, outside the bounds of gender and representation, also document a direct link between citizen ideology and policy outputs (Erikson, et al., 1993). This relationship is not commonly tested when analyzing substantive representation (Cammisa & Reingold, 2004; Childs & Krook, 2009). Thus, this hypothesis seeks to address this gap in the literature by analyzing the relationship between state citizen ideology and the substantive representation of women.

#### *The Women's Movement*

Beckwith and Cowell-Meyers (2008) determined that the presence of a strong feminist movement would result in an increase in substantive representation of women. Through the work of activists, the feminist agenda is publicized in the media and also aids in the development of an electoral mass in support of the agenda. Literature exploring the significance of social movements in relation to public policy

extends beyond the literature on women's descriptive and substantive representation (Burststein, 1999; Costain & McFarland, 1998; Giugni, 1998; Giugni, McAdam, & Tilly, 1999). The following section is divided into two parts. The first explores the theoretical foundation of the social movement literature, the second focuses specifically on the women's movement.

*Theoretical overview.* The study of social movements is grounded in the theoretical history of pluralism (McFarland, 1998). When discussing public policy, pluralism is considered a matter of plural points of power within the political system. Pluralism arose as a counter argument to C. Wright Mill's (1956) power elite theory, which stated that political power within the US is controlled by the top few hundred political elites (McFarland, 1998). Dahl (1958; 1961) countered this argument stating that power was dispersed within the American political institution amongst a variety of interest groups.

Currently, the study of social movements is grounded in post-pluralism theory (McFarland, 1998), where social movements are classically defined as "a set of opinions and beliefs in a population which represents preferences for changing some elements of the social structure and/or reward distribution of a society" (McCarthy & Zald, 1977, pp. 1217-1218), or as "collective challenges based on common purposes and social solidarities, in sustained interaction with elites, opponents, and authorities" (Tarrow, 1998, p. 4). While the policy sciences and political science tend to focus

analysis on the nature and power of vying interest groups, the majority of the literature focusing on mobilization comes from the field of sociology.

Early theory and research regarding collective action within sociology focused on social psychology of alienated groups that shared a subjective experience of grievance and deprivation. These shared beliefs were considered a necessary prerequisite to collective action (McCarthy & Zald, 1977). With the onset of the civil rights and women's movements, social movement literature exploded onto both the policy and sociology scene. The first generation of social movement literature emerged in the early 1970's where the main approach to social movements was a structural approach dubbed resource mobilization (Mueller, 1992).

Resource mobilization was grounded in political sociology, rational choice theory, and the work of Mancur Olson (1965). Olson's logic of collective action, as applied to social movements, argues that individuals weigh costs and benefits before opting to participate in collective action. Because the outcome of a social movement is a public good, few will be incentivized to participate. Instead individuals will become free-riders, reaping the benefits that other's sow (McCarthy & Zald, 1977). This theoretical shift from a social psychological to political-economic model formed the foundation for the resource mobilization perspective of social movements. Resource mobilization redefined the central issue of social movement research, focusing on social movement organizations along with their resources and tactics (Walder, 2009).

Closely aligned to resource mobilization, and sometimes categorized as component of resource mobilization, is the political opportunity structure (McAdam, 1982; Tarrow, 1988; Tilly, 1978). Where resource mobilization is primarily focused on the social movement organization, the political opportunity structure model, or political process model, focuses on the exogenous political and institutional factors that reside outside the boundaries of the social movement (Meyer & Minkoff, 2004; Stekelenburg & Klandermans, 2009). Eisinger (1973) first coined the term political opportunity structure, stating that it was concerned with the ability to “gain access to power and manipulate the political system”. A more current definition of the political opportunity structure comes from Tarrow (1994), “consistent – but not necessarily formal or permanent – dimensions of the political environment that provide incentives for people to undertake collective action by affecting their expectations for success or failure” (p. 85).

Since 1973, the political opportunity structure has become foundational in the study of social movements, and has since been used to incorporate a wide array of independent variables into research designs. While the strengths of the model lie in the ability to analyze how the political environment may shape opportunities for social movements, a weakness of the model includes the sheer breadth of its definition (Tarrow, 1988). In fact, it has been noted that scholars have used the model to throw everything but the kitchen sink into collective action research designs (E. A. Anderson, 2005). Despite this, there is a general consensus that the political



opportunity structure is typically comprised of access to formal institutions, allies within the political system, and power within the system (Tarrow, 1994).

This first generation of research and theory focused on the utilitarian and instrumental model of the individual, often ignoring structural and cultural components of social movements (Mueller, 1992). This included ignoring the relationship between the existing social structure and politics (Walder, 2009). This has also resulted in a tendency to focus on the who, why and when of social movements as opposed to social movement success (McCammon, Campbell, Granberg, & Mowery, 2001). Since the move to a political-economic model of mobilization, many have attempted to reintegrate the social-psychological elements of social movements back into research (Klandermas, 1982; Snow, et al., 1986; Walder, 2009).

The second generation of research and theory revisited the notion of individual grievances, values, and ideology. This perspective, rooted in the social constructionist community, included consideration of the sociopolitical culture, identity, emotions, as well as consideration of embedded inequity throughout all aspects of society (Meyer & Minkoff, 2004; Stekelenburg & Klandermans, 2009). This perspective is distinct from the structural basis of previous research focusing on resource mobilization and political opportunity structure, and is often referred to as cultural framing (Benford & Snow, 1988; Snow, et al., 1986).

Cultural framing is defined as the “mechanism through which individuals may understand what happens around them, identify sources of their problems, and devise methods for addressing their grievances” (Noonan, 1995, p. 85). These society-centered, contextual forces provide opportunity for social movements, outside of political institutions (McCammon, et al., 2001). Here, the ability of a social movement to create an enduring message relies upon their ability to “draw on the existing cultural stock for images of what is an injustice” (Zald, 1996, p. 266). Scholars study collective action framing in order to understand the ways in which social movements mobilize individuals, with particular consideration to values, meaning, identity and emotions. It also allows for the study of how these cultural and contextual factors alter policy-making (McCammon, et al., 2001). This is distinct from the political-sociology perspective that focuses on the rational actor and social movement organizations.

*The women’s movement.* Social movements have been critical to increasing substantive representation of women in the US. As stated by Banaszak (2008):

In the United States, social movements represent a major means by which unrepresented or underrepresented groups gain access to decision making or achieve social change. Women are among the many groups that have stood outside politics, needing social movements to acquire change. (p. 79)

Research on women’s movements, which in the US is typically found to be synonymous with the feminist movement, is often at the national level (Costain &

Majstorovic, 1994), but studies also exist in a comparative context as well as at the state level (Meier & McFarlane, 1992; Weldon, 2002).

For example, Weldon (2002) focused her research on social movements' impact on substantive representation, specifically investigating hypotheses similar to those posed by Beckwith and Cowell-Meyers (2007). The author did this in a cross-national analysis of feminist activism that focused on violence against women. The author looked at 36 democratic countries in 1994 in order to determine how feminist activism resulted in substantive representation in the policy process through national response. In her analysis, Weldon operationalized the women's movement using organizational data to compile a count of organizations. The strength and autonomy of these organizations were determined via content analysis. Weldon found that women's movements are statistically more significant than the descriptive representation of women in predicting the variance of substantive representation. Therefore, Weldon called for future research focusing on multiple sources of representation outside of the standard analysis of descriptive representation. Weldon's work is exemplary in that it provides evidence that substantive representation occurs as a result of a variety of different factors outside of legislative bodies.

Soule and King (2006) studied the affect of social movements on ratification of the Equal Rights Amendment at three different stages of the policy process across all fifty states. The authors operationalized social movements according to the

resource mobilization model with a measure of National Organization of Women (NOW) chapters in all 50 states across eleven years (1972-1982). Specifically, the authors used the WorldCat library database to count the number of newsletters produced by state and local level NOW chapters across all eleven time periods, arguing that the ability to publish a newsletter is a sign of organizational strength. Logistic regression revealed that the strength of the social movement is significant during the early stages of the policy process, primarily bill introduction. Soule and King's analysis is useful for this research design, because it analyzes the impact of social movements on substantive representation across different stages of the policy process.

As illustrated above, common ways to operationalize the women's movement include a variety of methods based on the resource mobilization model of social movements. For example, many choose to use membership data for social movement organizations (Meier & McFarlane, 1992). However, this method has typically not been an option when considering women's interest organizations, as many researchers have noted that feminist organizations are notorious for choosing not to collaborate with the academy on membership data (Bratton, 2002; Freeman, 1995). Others support the use of organizational data, as opposed to raw numbers related to membership (Barakso, 2004; Schulz, 2008; Soule & King, 2006). This, too, poses problems in regard to the validity and reliability of data, due to the fact that the women's movement is comprised of a huge array of organizations, both bureaucratic

and institutionalized as well as informal and grass roots. For example, in the 1980's, post-ERA, many different types of women's organizations sprouted up, such as community health clinics, rape crisis centers and domestic violence shelters. As such, measuring a social movement based on membership of a single organization doesn't fully capture the size and scope of the movement (Staggenborg & Taylor, 2005).

Additionally, during the 1960's and 1970's the feminist movement quickly split into two factions. One faction was dubbed the woman's reform movement and the second the liberation movement. Where the former was concerned with equality within the present social structure, the latter focused on radical social change and the creation of a new paradigm (Ryan, 1989). NOW and many other advocacy organizations typically fell into the women's reform camp, while women's liberation groups were more loosely structured, consciousness raising organizations (Barakso, 2004). The liberation group could be further delineated into a number of groups such as Marxist, socialist, radical and lesbian feminist groups. While these groups eventually agreed on a common definition of feminism, focusing on equality for all, the subsets of feminism persisted separate from the women's reform movement (Ryan, 1989). Because of this, focusing on NOW, or any other single organization, would result in an incomplete measure of the women's movement. It also would result in an essentialist operationalization, favoring one group or type of women over others.

Another common way to measure the movement includes feminist self-identification through polling data. Many maintain that self-identification with a group or specific ideology is a necessary prerequisite to behavior (Schnittker, Freese, & Powell, 2003). However, a cursory review of the feminist movement and feminist research highlights how disparate, and often contradictory, feminist ideology really is (Lorber, 2001). Also, many women adopt political beliefs consistent with the feminist agenda, but, due to a negative connotation of the term “feminist”, vehemently deny any association as a feminist (Bolzendahl & Myers, 2004; Schnittker, et al., 2003). As a result, using public opinion data concerning feminist ideology or self-identification is also not a suitable measure of the feminist movement.

Analysis over time utilizing common measures of the women’s movement such as membership data, organizational counts, protest events, or public opinion measures of ideology would not capture oscillation in movement activity. Some claim that we currently exist in a post-feminist society (Hawkesworth, 1994), but others argue this is simply because the methodology in which one typically measures social movements has failed to capture relevant elements of the women’s movement (Staggenborg & Taylor, 2005). Due to this, it is necessary to move beyond a traditional measure of social movements when operationalizing the US women’s movement.

*Culture & Structure.* The review of literature reveals that common measures of the women's movement fail to capture the entire picture, especially when measuring change over 40 years. This leaves us with a quandary. How do you measure the women's movement across forty years of change? A return to the cultural framing literature, as well as a review of the political opportunity structure offers a good starting point. Doug McAdam (2000), a leading scholar in the field, states, "Social movements are embedded in the cultures within which they act and should be understood in relation to the broader culture" (p. 253). Even Wildavsky (1994) notes that the concept of "self" is a socially constructed term that is a direct product of our social and economic conditions, or, our culture. In fact, many agree that that cultural change is consequential for individuals and for public policy (Cuthers & Lockhart, 2000; Wildavsky, 1994).

Conway, Ahern and Steuernagel aptly state (2004), "A cultural approach to public policy emphasizes the impact of factors such as class lifestyle, religion, ethnic identification and race on women's understanding of the political significance of their gender, a perception frequently referred to as gender consciousness" (p. 2-3). Like a string of dominoes, cultural change then alters the demands citizens make of government (Inglehart & Carballo, 1997; Inglehart & Flanagan, 1987; Taylor, 1989). Thus, it is expected that various cultural changes across different states will result in varying levels of substantive representation of women.

The emergence and growth of the women's movement is thought to be a direct result of the broad political and economic changes of the late 19<sup>th</sup> and 20<sup>th</sup> century. In regards to the women's movement, collective action is most often attributed to the drastic changes in personal and public life (Chafetz & Dworkin, 1986). In analyzing these broad structural changes in the lives of US women, it is clearly documented that specific socio-demographic variables impact opinions related to gender equity (Bolzendahl & Myers, 2004; Reingold & Foust, 1998). As stated by Banazsak and Plutzer (1993):

...feminist and antifeminist sentiments emerge in response to changes in the social structure of society, in response to personal changes in work or family life, and as a consequence of socioeconomic status...Individuals will tend to adopt political attitudes that endorse or reinforce lifestyle arrangements in which they find themselves. (p. 31-32).

McCammon et al (2001) studied these contextual factors at the state level in regards to women's suffrage movements. The authors state

...shifts in political circumstances altered the political calculus on which decision-makers based their actions, providing a political opportunity for suffrage. On the other hand, changing gender relations also caused political decision-makers to alter their views about the proper roles for women in society, and these changing attitudes about gender– not changing attitudes about the political viability of a particular stance on suffrage–provided a gendered opportunity for suffrage success. (p. 51)

Here gender relations is defined as "the social organization of the relationship between the sexes" (Scott, 1986, p. 1053).



Consideration of altered gender relations in the past forty years often include change in the employment status of women, status as wife and mother, educational achievement, family size, age, and religiosity, to name a few (Pelak, 1999; Rosenfeld & Ward, 1991). In fact, McCammon et al (2001) found that a “new woman” index, a combined measure of educated, professional women that are politically and civically active, was statistically significant in predicting suffrage at the state level.

It is important to analyze this shift in women’s lives because it altered and elevated the demands women made of the government and of society regarding their economic, political and social status (Banaszak, 1996). Despite this, there is a dearth of empirical research linking gender relations, gender opportunity structures, and policy outcomes (Banaszak, 1996; Rosenfeld & Ward, 1991; Scott, 1986). While most research focuses on how various socio-cultural variables impact descriptive representation of women (Schlozman, Burns, & Verba, 1994, 1999; Verba, Burns, & Schlozman, 1997), very few have analyzed gender relations and gender opportunity structures *in relation to* substantive representation (McCammon, et al., 2001). Yet, there is agreement that these variables will impact substantive representation.

*Gender Opportunity Structure.* Women entered the labor force in staggering numbers following World War II. As women moved into the workforce, their opinions and world views expanded and they also gained leadership and managerial skills, both of which have enhanced their ability to become politically active (Schlozman, et al., 1999). It has been determined that participation in the workforce

leads to female political participation (Rosenbluth, Salmond, & Thies, 2006). In fact, women's labor force participation is important to the representation of women (Matland & Montgomery, 2003; Salmond, 2006), where an influx of women within the workforce may "demand" policies reconciling labor within the private and public sphere (Henderson & White, 2004). Lastly, Rule (1987) and Norris (1985) both found that there was a correlation between labor force participation and representation of women, where representation of women is descriptive. As a result, it would be of value to include labor force participation rates when considering gender opportunity structure.

Education is paramount to women obtaining an equivalent social status to men. Not only does education increase a woman's skills and abilities related to the workforce, but it also serves as a tool to increase knowledge and awareness through exposure to ideas (Bolzendahl & Myers, 2004). Similar to labor force participation, results show that educational achievement is directly related to gender consciousness and gender relations (Bolzendahl & Myers, 2004; Plutzer, 1988; Reingold & Foust, 1998; Rhodebeck, 1996). Scholars have also determined that women's level of educational achievement is important in predicting women's descriptive representation (Krook, 2005; McDonagh, 2002; Moore & Shackman, 1996; Weldon, 2002). Again, for these reasons consideration of educational attainment is relevant to this research design.

Lastly, the 1970's and 1980's saw the liberalization of divorce laws across many states. With a dramatic increase in divorce rates, many women found themselves adopting nontraditional roles in an effort to support themselves and their dependents. This included increased participation in the workforce, and, with it, awareness of issues such as childcare, equal pay, and sexual harassment, to name a few (Bolzendahl & Myers, 2004). Research has shown that a women's marital status impacts feminist attitudes and gender relations (Cook, 1989; Klein, 1984). Thus, it is important to include consideration of divorce rates when operationalizing gender opportunity structure.

Broad, social structural change was necessary to not only facilitate the women's movement, but to also transform women into an important component of the constituency (Costain, 1992; Klein, 1988; Minkoff, 1997). It was this shift in the social structure that prompted mobilization and policy change. Changes in gender relations create demand for favorable social policies that support the new paradigm. A change in the paradigm creates a new social base from which the feminist movement emerged (Rosenfeld & Ward, 1991). By defining the women's movement as gender opportunity structure, one can assess how powerful structural change in gender relations impacts substantive representation. By analyzing the gender opportunity structure, this research design takes another step in addressing a gap in the literature regarding state-level contextual forces and substantive representation (Cammisa & Reingold, 2004). The fifth hypothesis is as follows:

H<sub>5</sub>: States that have a more liberal gender opportunity structure will have higher rates of substantive representation of women.

In conclusion, the literature concerning civil society contexts commonly includes public opinion, ideology, political culture, social movements, and interest groups. For the purposes of this research design state citizen ideology has been found to be a useful and reliable measure for public opinion. In order to measure dynamics at play concerning the women's movement, gender relations, and the gender opportunity structure, an index measure will be created measuring labor force participation, educational attainment and divorce rates. This index measure will be titled "Gender Opportunity Structure."

Inclusion of this variable within the model seeks to address a gap in the research regarding the relationship between the gender opportunity structure and policy outcomes (Banaszak, 1996; Rosenfeld & Ward, 1991; Scott, 1986). Existing research typically focuses on how various socio-cultural variables impact descriptive representation of women (Schlozman, et al., 1994, 1999; Verba, et al., 1997), but very few have analyzed the gender opportunity structure and substantive representation of women (McCammon, et al., 2001). In order to construct a parsimonious research design and to also allow the literature to guide the use of specific variables, societal contexts will be limited to these two variables. The next section provides a critical analysis of the existing literature.

## Critical Analysis

Research on women, representation and public policy covers a wide range of topics at all levels of governance. The following section synthesizes the major gaps in the research and the ways in which this research design addresses the gaps. Specifically, discussion regarding the theoretical model, the unit of analysis, and sampling is reviewed as contributions to the literature. The research question and hypotheses supplement current research by investigating similar questions with new data and research methods. As a result, the significance of this study is largely empirical in nature.

### *Theoretical Model*

This chapter began with an overview of the competing arguments regarding the representation of women. Analysis of representation focuses on three competing perspectives. Those arguing in favor of critical mass state that a specific percentage of women must exist before substantive representation can occur. This level varies across the literature and according to how substantive representation is defined and measured. Others argue that as the levels of women increase, their effectiveness decreases as they lose their token status. Alternatively, some contend that substantive representation is the work of a policy entrepreneur, where substantive representation of women will occur due to the efforts of one or a few individuals, regardless of the level of descriptive representation. Finally, scholars have recently begun to call for a more comprehensive assessment of substantive representation, signaling a departure

from a strict focus on descriptive representation to an analysis of legislative factors and societal contexts. This line of research is relatively new and unexplored within the research on substantive representation of women.

The literature review extensively reviewed Beckwith and Cowell-Meyers' (2007) theoretical model and arguments for expanding research beyond the body count to the legislative and social contexts of the policy process. When analyzing representation of women it is imperative that one consider the political and social context where descriptive representation translates to substantive representation (Cammisa & Reingold, 2004; Swers, 2000). As stated by Reingold (2008), "...we could benefit from more historical and comparative approaches that might account for the effects of changes in interest group and social movement formation, public opinion, voting behavior, and issue cycles" (p. 145). This study addresses this issue through the development of a model incorporating descriptive representation, legislative factors, and societal contexts, moving beyond an analysis of how individuals represent women.

#### *Unit of Analysis*

Early research on gender and public policy focused on demographic characteristics of female representatives. Researchers asked questions relating to the traits of women (Werner, 1966, 1968) and then moved on to compare men and women in public office (Cammisa & Reingold, 2004; Diamond, 1977). Most of this early work focused on the individual as the unit of analysis. This trend continued

through the 1980's and 1990's as scholars amassed an impressive collection of literature concerning women and individual behavior in elected office (Cammisa & Reingold, 2004; Swers, 2002b). Yet, since the turn of the century, more and more scholars are advocating for macro-level analysis, studying aggregate outcomes. In their review article of gender specific state-level research Cammisa and Reingold state (2004):

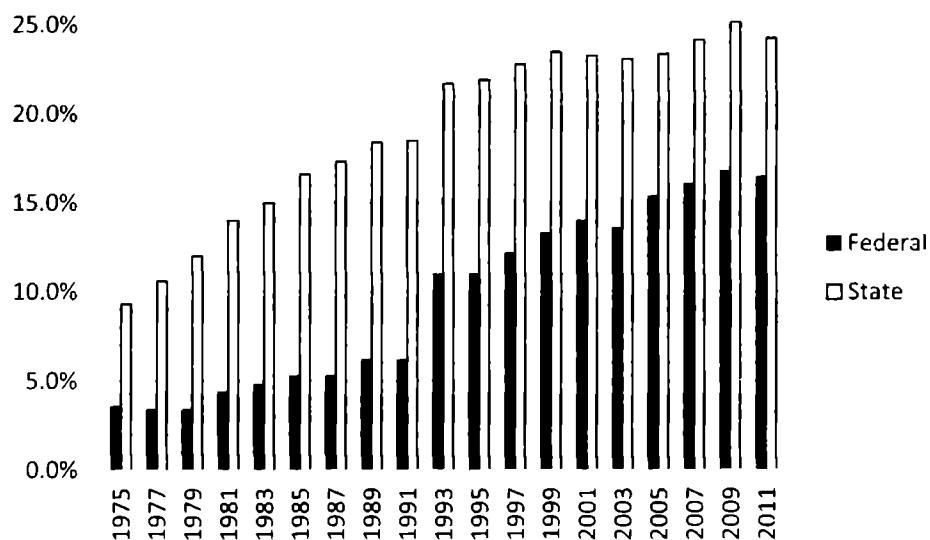
Much less work has made systematic state-level comparison of legislative gender dynamics, and even less attention has been paid to the actual impact of women on state legislative outcomes and processes...Moreover, the novelty of women's entry into state legislatures has meant that questions of what they do are more easily answered than questions of what impact they have and how that impact varies across states. (p. 191)

This sentiment is echoed by others advocating for institutional level analysis (e.g. Reingold, 2008).

Research at the aggregate level exploring the relationship between descriptive representation and aggregate policy outcomes is not as commonly studied as micro-level analysis focusing on the individual (Bratton, 2005; Cammisa & Reingold, 2004; Reingold, 2008). This research design addresses this gap in the literature by studying descriptive and substantive representation across the policy process in all 50 states for two time periods and across 25 states for an additional two time periods. By shifting the unit of analysis from the micro level to the macro level it is possible to investigate how the variation in descriptive representation, legislative factors, and societal contexts is associated with the substantive representation of women.

### *Sampling & Research Design*

The representation of women within state legislatures has dramatically changed since the 1970's. With the backdrop of the civil rights movement and the second wave of feminism, women increased their representation in state legislatures from less than 6% in 1973 to over 13% in 1983. By 1993 state legislatures, on average, were composed of approximately 20% of women. In 2011 the tally is at 23.3% (CAWP, 2011a). Figure 2.2 shows the increase of descriptive representation of women in the lower house of state legislatures and in Congress dating from 1975.



**Figure 2.2. DESCRIPTIVE REPRESENTATION OF WOMEN AT THE STATE AND FEDERAL LEVEL, 1975-2011.**  
Source (CAWP, 2011)

State legislatures offer researchers a unique look at women in elected office. As compared to state-level executive positions or representation in Congress, levels



of representation in state legislatures are significantly higher. In addition, state legislatures offer a relatively comparable institutional arrangement, yet the state political and social context varies dramatically across states (Cammisa & Reingold, 2004). Lastly, issues of concern to women are primarily considered state issues, such as reproductive justice, women's health, and laws related to violence against women. This offers fruitful ground for cross-state analysis.

State-level research exploring gender and representation primarily relies on data from small representative samples of states or single state case studies. While all three have strengths and weaknesses, no one has yet published a large-N, cross-state, comparative analysis of descriptive and substantive representation. This is due to the fact that development of a dataset across states and over time is an arduous process requiring a great deal of time and resources (Cammisa & Reingold, 2004). This creates a large gap in the literature. In constructing this type of dataset, one can explore the entire picture, not just pieces of the puzzle. This may well result in exposing specific contexts in which substantive representation is most likely to occur.

Pursuing this research design necessitates the development of a new dataset. This will include comprehensive coding of women's interest legislation at the state level for four time periods: 2005, 1995, 1985 and 1975. For the earlier periods, data will be collected for 25 states, and for the two most current time periods data will be collected for all 50 states. A dataset such as this does not exist and offers the opportunity to explore uncharted territory in regards to the proposed research

question and hypotheses, as well as a myriad of other research questions that have yet to be answered. These unanswered questions are directly related to gender, policy and representation and are a matter of concern for gender equality and democracy.

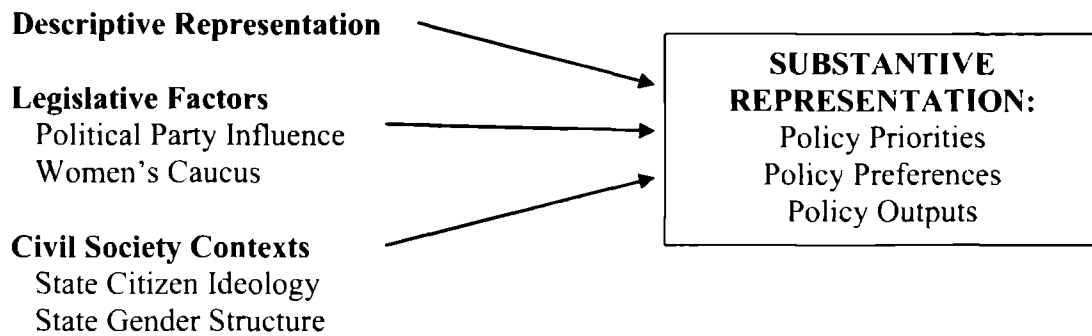
### Summary

Beckwith and Cowell-Meyer's (2007) model offers a new theoretical framework in which to explore descriptive and substantive representation of women. Beckwith and Cowell Meyer's constructed a model to be comparative in nature. Despite this, a thorough review of the literature proves that an adaptation of the model within US state legislatures would fill a gap within the research exploring representation of women.

A review of literature determined that an adaptation of the predictor variables for the US states is necessary based upon the availability of data and specific factors unique to state-level research. In regards to legislative factors, this includes a women's caucus variable. Civil society contexts have also been modified to reflect conditions within the US with the inclusion of state citizen ideology as a measure of public opinion and the gender opportunity structure in lieu of a measure of the strength of the women's movement.

Based on the literature within the US concerning the policy process, the proposed research design varies from Beckwith and Cowell-Meyer's (2007) design concerning the dependent variables. While Beckwith and Cowell-Meyer's limited their dependent variable to outputs, or in this case women-friendly public policy, but

it has been documented within the literature that this, alone, is a weak operationalization. By limiting public policy to outputs one does not capture the complexity of the policy process nor does it offer a comprehensive measure of legislators' behavior. Thus, the design has been extended concerning the dependent variable, substantive representation. This includes three measures of substantive representation meant to capture representation at three different stages of the policy process. Figure 2.3 offers a revised model.



**Figure 2.3. REVISED THEORETICAL MODEL.**

The theoretical model, variables, unit of analysis, and sampling were guided by the literature in an effort to complement current research and to fill the gaps in existing literature. The next chapter, Methodology, explores this research design in greater length detailing definition and operationalization of variables, sampling, data collection, analysis, as well as threats to reliability and validity..

## CHAPTER THREE:

### METHODOLOGY

Chapter Three offers an in-depth review of the research design. First, a review of the research purpose, research question and hypotheses lays the foundation for the data collection and methodology. Next, a detailed account of the operationalization, measurement and data collection procedures is presented for purposes of replicability. This is followed with a thorough review of the statistical analysis, including an explanation of panel data analysis and diagnostic tests, as well as a description of the specific statistical methods used to analyze the data within this research design. The chapter concludes with a discussion of the threats to reliability and validity.

#### Research Purpose, Question, and Hypotheses

A comprehensive review of the literature demonstrates that the nature of the relationship between descriptive representation of women and substantive representation of women has not yet been established (Beckwith & Cowell-Meyers, 2007). Scholars argue that it is time to move beyond study of the individual to the aggregate, examining not just descriptive representation, but legislative factors, and societal contexts, as well (Cammisa & Reingold, 2004). This research contributes to the literature regarding gender and representation by expanding the scope of the

analysis to the macro level, which has not yet received much attention within the literature. This macro level unit of analysis allows for the inclusion of variables beyond descriptive representation, such as legislative factors and societal contexts. These variables are common in policy studies and political science literature, but they are not as common when examining descriptive and substantive representation of women.

Lastly, this research design contributes to the literature through the creation of a comprehensive dataset for all 50 states for two periods of time, and 25 states for an additional two time periods. This far outstrips typical research designs examining just one state, or a small representative sample of 6 to 12 states. As such, the purpose of this study is to explore the relationship between descriptive representation, legislative factors, and societal contexts and substantive representation of women. The review of literature in the preceding chapter established the foundation for the following research question:

What is the impact of descriptive representation of women, legislative factors, and societal contexts on the substantive representation of women at three different stages of the policy process, within the US states?

This research question, in conjunction with a comprehensive review of literature, guided the development of the following hypotheses:

H<sub>1</sub>: State legislatures that have more female legislators will have higher rates of substantive representation of women.

H<sub>2</sub>: State legislatures that have a greater Democratic majority will have higher rates of substantive representation of women.

H<sub>3</sub>: State legislatures that have a women's caucus will have higher rates of substantive representation of women.

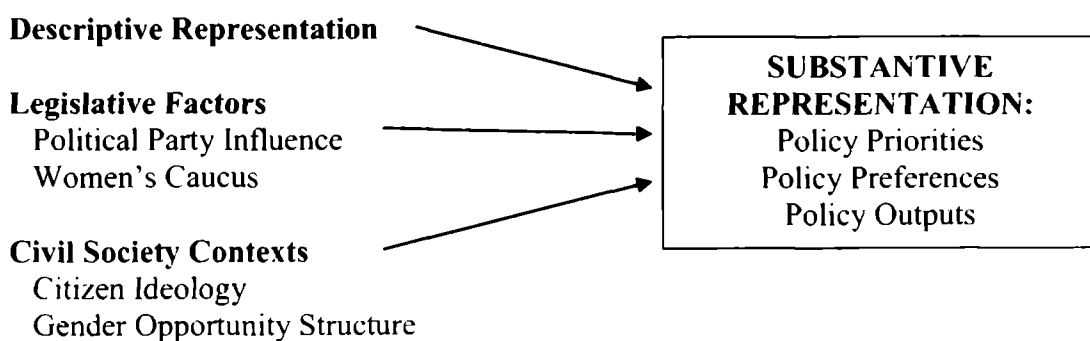
H<sub>4</sub>: States that have a more liberal citizen ideology will have higher rates of substantive representation of women.

H<sub>5</sub>: States that have a more liberal gender opportunity structure will have higher rates of substantive representation of women.

The next section discusses the relationship between the research question and hypotheses and the research design.

### Research Design

This research design is rooted in Pitkin's (1967) theory of representation and is adapted from Beckwith and Cowell-Meyer's model (2007), presented earlier in Chapter Two. The design seeks to answer the aforementioned research question and address the related hypotheses. Figure 3.1 provides an illustration of the hypothesized relationship between the independent and dependent variables.



**Figure 3.1. THEORETICAL MODEL.**

### *Unit & Period of Analysis*

The unit of analysis within this research design is the general session within the lower chamber of the state legislature. The lower chamber of state legislatures offers a unique opportunity to explore the substantive representation of women. Women are more successful at securing seats in state houses as opposed to Congress. Within state houses, the lower chamber historically has higher rates of female representation, as opposed to the upper chamber (CAWP, 2011c). Additionally, choosing the state as the level of analysis is ideal because a large number of women's interests fall under the purview of state policy such as welfare, violence against women, women's health, and reproductive rights (Cowell-Meyers & Langbein, 2009).

Lastly, cross-state variation allows us to examine varying levels descriptive representation, legislative factors and civil society contexts. Data were collected for four time periods – 1975, 1985, 1995, and 2005. These dates refer to the general session within each state during that year. These years were selected to encompass the vast changes made in social, cultural and political rights of women in the past 40 years. These specific years were also selected to coincide with the general session of states that meet biannually<sup>1</sup>. Data were collected for the independent and dependent

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<sup>1</sup> Currently, all 50 states meet annually except for Montana, Nevada, North Dakota, and Texas. These states meet every other year, in odd years. Oregon, Arkansas, Kentucky, New Hampshire, and Washington were the last states to change to an annual meeting, which occurred in 2011. 2009, 2001, 1985, and 1981, respectively. Of these states, only one state met biannually in even years – Kentucky

variables across all 50 states for two time periods, 1995 and 2005. Data were collected for an additional two time periods for 25 states, 1985 and 1975. This resulted in a panel dataset uniquely designed to address the research question and hypotheses through quantitative analysis. The following section discusses the variables presented in Figure 3.1.

## Variables

### *Substantive Representation: The Dependent Variables*

The dependent variables are related to the construct substantive representation of women. Recall that substantive representation is the statement of the goals and interests of a group represented by the individual (Pitkin, 1967). In regards to women, this research design follows the definition established by Bratton (2002) who defines substantive representation of women as “women’s interest legislation.”

As detailed in the review of the literature, substantive representation can encompass a wide range of definitions and viewpoints. Bratton (2002) states that

...women’s interest legislation is defined as legislation that would decrease discrimination or counter the effects of discrimination or would improve the social, economic, or political status of women. These generally involved three overlapping categories: measures that addressed the health concerns of women; measures that addressed the social, educational, and economic status of women; and measures that addressed the political and personal freedom of women. (p. 139)

These three categories narrow the scope of women’s interest legislation, but still provide a rather obtuse definition. In order to provide a replicable research design, a

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(NCSL, 2010). Data were collected for Kentucky in 1994, instead of 1995, to accommodate the even-year biennium.



range of topics related to women's health, women's social, education and economic status, and women's political and personal freedom were selected based upon the traditional policy concerns of a wide group of women as defined by leading institutions<sup>2</sup>, as well as both academic and popular texts (Dodson & Carroll, 1991; Friedan, 1963; Gelb & Palley, 1982, 1996; Klein, 1984; Mazur, 2002; Swers, 2002a).

The final coding framework, available in Appendix A, was meant to be a comprehensive, but not all encompassing list of women's interest legislation. The construct of substantive representation is separated into three separate sub-constructs: policy priorities, policy preferences and policy outputs. The next three sections detail the operationalization and measurement of women's interest legislation under these three sub-constructs.

The policy priorities variable is operationalized as bill introductions. Bill introductions are measured as a percent of the total bills introduced in the lower house during the general legislative session related to women's interest legislation. A percentage is used, as opposed to a raw number, to control for the variability in bills introduced between state legislatures. The policy preferences variable is a measure of roll-call votes. Within this research design, the policy preferences variable measures the average aye vote for all women's interest legislation introduced in that session that reached the final reading and vote. Finally, the policy outputs variable is a

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<sup>2</sup> Institute for Women and Public Policy Research, Center for American Women and Politics, National Organization for Women, Feminist Majority, Moms Rising, American Association of University Women

measure of the women's interest legislation introduced during that session that passed the lower house. Similar to policy priorities, policy outputs are measured as the percent of total in order to control for the variability in total bills sponsored between state legislatures. Table 3.1 offers a concise overview of the operationalization and measurement of the dependent variables. Each variable is a continuous variable.

**Table 3.1.** Operationalization of dependent variables.

| <b>Dependent Variables</b> | <b>Operationalization</b>                                                    | <b>Measurement</b>                                                                                                                                                                        |
|----------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Policy Priorities          | Bill Introductions in the lower chamber                                      | Number of women's interest legislation introduced during the regular session divided by the total number of bills introduced in the regular session                                       |
| Policy Preferences         | Aye votes for all women's interest legislation voted on in the final reading | Average aye vote at the final roll-call vote for all women's interest legislation receiving a vote                                                                                        |
| Policy Outputs             | Women's interest legislation passing the lower chamber                       | Number of women's interest legislation passed by the lower chamber divided by the total number of women's interest legislation introduced during the regular session in the lower chamber |

#### *Independent Variables*

The independent variables within this research design include descriptive representation, political party influence, women's caucus, citizen ideology, and

gender opportunity structure. The first independent variable is descriptive representation. Descriptive representation is operationalized as seats held by women in the lower chamber of US state legislatures<sup>3</sup>. This variable is measured as a percent of the total to account for the number of seats across state legislatures. A one unit change in this variable represents a one percent increase or decrease in the share of seats held by women in any given state legislative chamber.

Political party influence is the second independent variable. Political party influence is operationalized as Democratic Party influence, and is measured as a percent of seats held by Democrat representatives<sup>4</sup>. A one unit change in this variable represents a one percent increase or decrease in the share of seats held by the Democratic Party in the lower chamber of a state legislature.

The final legislative variable is women's caucus. Women's caucus is operationalized as the presence of a formal, organized group of female representatives. Women's caucus is a binary variable with a value of 1 = caucus, 0 = no caucus.

Two variables are categorized as civil society contexts – state citizen ideology and gender opportunity structure. These variables are lagged for one year to establish temporal precedence (Stimson, Mackuen, & Erikson, 1995). State citizen ideology is

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<sup>3</sup> In the case of Nebraska, which has a Unicameral, the number of seats held by women in the single chamber were counted.

<sup>4</sup> Nebraska has a nonpartisan Unicameral. In lieu of removing Nebraska from the analysis, the mean value of the variable for the respective time period was used in the analysis.

measured with the citizen political ideology measure constructed by Berry, Fording, Ringquist and Hanson (1998). This measure is constructed using interest group roll-call voting scores, congressional election outcomes, partisan divisions of state legislatures, party of the governor and a series of assumptions concerning political elites. Here a one unit increase represents a more liberal citizen ideology.

The final independent variable, gender opportunity structure, is an index variable constructed using three measures.<sup>5</sup> The first is the labor force participation rate of women (civilian non-institutional) ages 16 and older, measured as a percent of total. The second is educational attainment of women between the ages of 25 and 64. Educational attainment is measured as a percent of the population holding a bachelor's degree or higher. Divorce rates are the last measure. This measure is the percent of women 16 and older that were divorced in the survey year.

These measures were combined to create a composite index measuring the gender opportunity structure. A composite index is a set of indicators, not necessarily a result of a specific factor, that determine the same outcome (DeVellis, 2003). A

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<sup>5</sup> The methodology proposed by Soule and King (2006), reviewed in Chapter Two, was the proposed operationalization of social movement strength within this research design. The authors' data collection procedures utilized the WorldCat library database to generate a count of the number of newsletters produced by NOW chapters across all 50 states for the years 1972-1982. However, replication revealed that the results did not produce a valid and reliable measure. First, operationalization is not valid for the 1995 and 2005 time periods, where published newsletters failed to be the primary source of communication with NOW members, ceding to electronic, web-based communication. Thus, a measure of chapters publishing newsletters is not an accurate reflection of the number of NOW chapters in each state for 1995 and 2005. Second, the measure was not found to be reliable. The Worldcat database searches thousands of library catalogs. Matching database results with the results of Soule and King revealed inconsistent counts of newsletters. This search was done utilizing Worldcat at three academic libraries: University of Colorado Denver, University of California-Irvine and California State University-Fullerton.

composite index has several benefits which include richer operationalization and measurement of a given variable, a reduction in the risk of measurement error, reduction in the risk of multicollinearity, a parsimonious research design, and more efficient analysis and interpretation (Babbie, 2010; Scavo, 2008). There are a number of common ways in which to develop a composite index. In the case of similar units of measurement, often the values are simply summed. For instances where the units of measurement are vastly different, the values are often standardized by converting to z-scores. The values are then summed (Scavo, 2008).

I developed the composite index duplicating methods used by the Institute for Women and Policy Research in their development of a women's political participation composite index (Werschul & Williams, 2004). The data were standardized by dividing the observed value for each state, from the national average. The values were then summed to create a score that represents a continuous variable. A one unit increase represents a more liberal gender opportunity structure.

A number of tests were performed to ensure that the measure is both reliable and valid. Internal consistency reliability assesses how well the three items measure a single phenomenon. This is typically done using Cronbach's alpha. Cronbach's alpha values for these three items was acceptable with a value of  $\alpha = .78$  ( DeVellis, 2003).

Both internal and external validity are also important in order to ensure that the composite measure "behaves the way that the construct it purports to measure should behave with regard to established measures of other constructs" (DeVellis,

2003, p. 53). I assessed the validity of the index by examining the correlation coefficients for the index and the individual measures. The average correlation between the individual measures and the index was  $r = .85$ , indicating an internally valid index.

Lastly, I assessed external validity by examining the correlation of descriptive representation and the gender opportunity structure index. The expected relationship is a strong, positive correlation. The correlation,  $r = .70$ , indicates an acceptable degree of external validity. A thorough discussion of the study's limitations including threats to reliability and validity are included at the end of this chapter.

In summary, Table 3.2 offers a list of the independent variables, their operationalization and measurement. The independent variables are continuous variables with the exception of the women's caucus variable. The women's caucus variable is a binary variable. In the next section the data collection procedures are detailed for each dependent and independent variable.

**Table 3.2.** Operationalization of independent variables.

| <b>Independent Variables</b>  | <b>Operationalization</b>                                                            | <b>Measurement</b>                                                                       |
|-------------------------------|--------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Legislative Factors</b>    |                                                                                      |                                                                                          |
| Descriptive Representation    | Number of seats held by women in lower chamber                                       | Percent of the total                                                                     |
| Political Party Influence     | Seats held by Democratic Party                                                       | Percent of total                                                                         |
| Women's Caucus                | Presence of a formal female group of state representatives                           | 1 = caucus, 0 = no caucus                                                                |
| <b>Civil Society Contexts</b> |                                                                                      |                                                                                          |
| Citizen Ideology              | State citizen political ideology (W. D. Berry, et al., 1998)                         | Average ideology scores for major party candidates weighted for specific state districts |
| Gender Opportunity Structure  | Composite Index of Labor Force Participation, Educational Attainment & Divorce Rates | Sum of the standardized measures                                                         |

#### Data Collection

#### *Dependent Variables*

A number of research studies code women's interest legislation within state legislatures (Bratton, 2005; Bratton & Haynie, 1999; Bratton, Haynie, & Reingold, 2006; Cammisa & Reingold, 2004; Reingold & Schneider, 2001; Thomas, 1991). yet these studies don't typically detail their data collection procedures. Therefore, data

collection for this study used original methods that do not seek to duplicate existing data collection procedures.

Data for the dependent variables were collected from four major sources – LexisNexis State Capitol (LNSC), state legislative journals, state legislative websites, and directly from state archives or state law libraries. Bills were coded based upon substantive content for the legislative sessions of the lower chamber in the year 1975, 1985, 1995, and 2005. I restricted coding to legislation proposing new laws and did not include resolutions, memorials or budget bills (Bratton, 2002). Bills focused on women, but in direct contrast to social, economic, or political advancement of women, were not included. An example of this is a bill that seeks to restrict access to abortion or a bill limiting insurance coverage for breast cancer treatment.

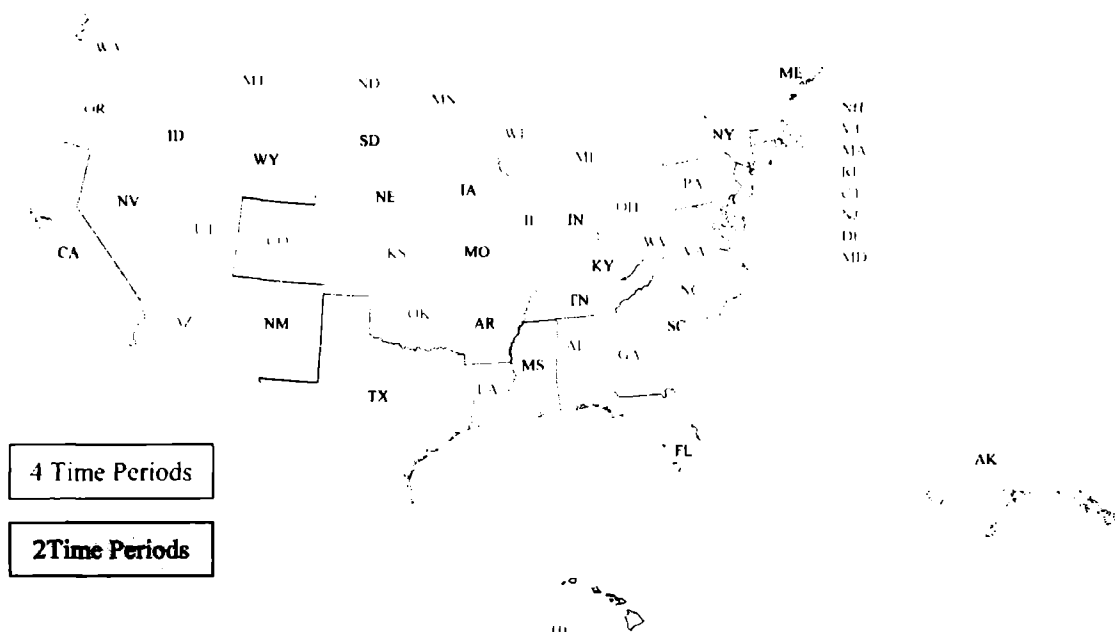
For the 2005 and 1995 time periods, data were collected using LNSC. This database is an invaluable resource for state legislative scholars, offering comprehensive information regarding bills, laws, regulations, and legislative members for all 50 states, dating back to 1991 (LexisNexis, 2011). LNSC offers a key word search that examines bills originating from each chamber of the state legislature. The women's interest legislation identified in Appendix A was adapted to create nine comprehensive groups of search terms, with up to 15 terms per group. Two states were randomly selected to test the queries. The search terms were refined and updated after testing. The final list can be found in Appendix B. After refining and updating the final key word search list, the data collection procedures were then



duplicated for the two test states and applied to the remaining 48 states. Using the key word search, the search hits for each state were examined to ensure that the nature of the bill matched the women's interest legislation topic. If the bill did pertain to women's interest legislation, the date of introduction, the sponsor, the bill summary, the last stage in the legislation process, and roll call votes, if applicable, were recorded in a spreadsheet. This was done for all 50 states for two time periods.

Data for the dependent variables for the 1975 and 1985 time periods were collected from state legislative journals. I developed these data collection procedures by selecting two states at random and coding their content using information available within the journal. Adhering to the same list of women's interest legislation and search terms, I referenced the subject index of each state journal to create a list of women's interest legislation within each state. Again, data relating to the date of introduction, the sponsor, the bill summary, the last stage in the legislative process, and roll call votes, if applicable, were recorded in a spreadsheet. The journals also provided a table of bills, which included information regarding the bill sponsor, date of introduction, a brief bill summary, and the tracking of the bill's process through the lower chamber. The initial list of women's interest legislation generated from the index was then cross-referenced with the table of bills in order to be as comprehensive as possible. After these procedures were piloted with the two test states, they were then repeated for an additional 23 states, and duplicated for the two test states.

The legislative journals were secured using both interlibrary loans as well as physically visiting the University of Iowa Law Library. Some states, such as Iowa 1975, California 1975 or New Mexico 1975, simply did not have a subject index in the legislative journal. Other states, such as Hawaii and Alaska, were impossible to secure through interlibrary loan. The University of Iowa retains the most comprehensive collection of state legislative journals outside of the Library of Congress, yet it has gaps in its collection. Thus, the selection of the 25 states is a convenience sample based on the availability of journals through interlibrary loans or the University of Iowa, as well as the journal contents. Figure 3.2 is a map illustrating data collection for states within this research design. An ordered list can be found in Appendix C.



**Figure 3.2. STATE DATA COLLECTION.**

States varied dramatically in the type of information available within the legislative journals and on state legislative websites. In addition, at times LNSC had gaps in the availability of data for bills, especially in relation to the 1995 time period. Therefore, additional questions about the nature of a bill or roll call votes were inevitable. These gaps in the data collection were addressed by directing inquiries to state archives, legislative clerks, or state law libraries in order to secure the final details for each bill. This resulted in the compilation of 5,900 bills coded as women's interest legislation across 50 states for two time periods and 25 states for an additional two time periods. Finally, the data were aggregated by state and year according to the methods described within the preceding section.

### *Independent Variables*

Data collection regarding the independent variables was considerably straightforward, as compared to the dependent variables. First, data for descriptive representation were secured from the Center for American Women and Politics (CAWP, 2011c). Data regarding political party influence were available from a supplement from the biannual edition of the Book of the States (CSG, 2011). The state citizen ideology variable was retrieved from the website State Citizen & Government Ideology (Fording, 2009). Data collection for both the women's caucus variable and the gender opportunity structure variable were collected from several different sources.

Comprehensive data regarding the presence of a women's legislative caucus do not exist. As a result, several sources provided the data necessary for this study. The National Conference on State Legislatures published a report offering a starting point for collecting data on women's legislative caucuses (Oliver, 2005). This material was supplemented with data from the Center for American Women and Politics (CAWP, 2010). The data were then validated through triangulation, fact checking through caucus websites (CWLC, 2010; LWC, 2010; LWLC, 2010; VSA, 2010; Wise, 2010), books and scholarly sources (Jones & Winegarten, 2000; Kanthak & Krause, 2010; Keyserling, 1998; Mahoney, 2011; Reingold & Schneider, 2001; Schenken, 1995; Smiley, 2007; Witt, Paget, & Matthews, 1995), informal email communication (Keuther, 2010; Mason, 2010; McCoy, 2010; Skipper, 2010; Smith, 2010), and news media coverage of women's caucuses (AP, 1998; Bass, 2000; Bernick, 1994; Gregg & Sullivan, 1989; Gross, 1992; Intress, 1996; Kiernan, 1991; Leonard, 1992; Lutey, 2008; Nussbaum, 1981; O'Matz, 1994; Propp, 1996; Stiffler, 1999; Whereatt, 1987).

Lastly, data for the gender opportunity structure were sourced from the annual Community Population Survey<sup>6,7</sup>. These data were available through the University

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<sup>6</sup> Based on sampling methods, the Community Population Survey was unable to compute an average rate for a number of states for the year 1974. Therefore, the average labor force participation rate was computed per region for 36 states. Region One: Alabama & Mississippi; Region Two: New Hampshire, Maine, Vermont, & Rhode Island; Region Three: South Carolina & Georgia; Region Four: Kentucky & Tennessee; Region Five: Iowa, North Dakota, South Dakota, Nebraska, Kansas, Minnesota & Missouri; Region Six: Washington, Oregon, Alaska, & Hawaii; Region Seven: Montana, Wyoming, Colorado, New Mexico, Utah, Nevada, Arizona & Idaho; Region Eight: Delaware, Maryland, Virginia & West Virginia; Region Nine: Wisconsin & Michigan.

of Minnesota's Population Center. The Center houses the Integrated Public Use Microdata Series (IPUMS) which makes data from the US Census Bureau easily and readily accessible to the public (MPC, 2010).

The data collection procedures resulted in an aggregate dataset with state cross-sections for the years 1975, 1985, 1995, and 2005. These data are referred to as panel data or time-series cross-section data and require specific consideration during quantitative analysis. The following section details the panel data analysis.

### Panel Data Analysis

#### *Panel Data Explained*

A panel dataset, also known as a time-series cross-section dataset (TSCS), contains both a spatial and temporal dimension (Eom, Lee, & Xu, 2008). A cross-sectional dataset explores the relationship between variables across a unit of analysis (*i*) for one time period. A time-series dataset explores the relationship between variables within one unit across a number of time periods (*t*). The panel dataset pools repeated observations on the units across multiple time units. Within this research design, units refer to states. For the purposes of this study the terms unit and state and will be used interchangeably. A panel dataset is similar to the model shown in Figure 3.3.

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<sup>7</sup> Data for educational attainment was coded as 4+, 5+ and 6+ years for the years prior to 1990. CPS standardized these data to align with the improved survey for years following 1990, which more clearly indicate Bachelor's, Master's and Doctoral degree attainment.

|                   |                   |
|-------------------|-------------------|
| Unit <sub>1</sub> | Year <sub>1</sub> |
| Unit <sub>1</sub> | Year <sub>2</sub> |
| Unit <sub>1</sub> | Year <sub>3</sub> |
| Unit <sub>2</sub> | Year <sub>1</sub> |
| Unit <sub>2</sub> | Year <sub>2</sub> |
| Unit <sub>2</sub> | Year <sub>3</sub> |
| Unit <sub>3</sub> | Year <sub>1</sub> |
| Unit <sub>3</sub> | Year <sub>2</sub> |
| Unit <sub>i</sub> | Year <sub>i</sub> |

**Figure 3.3.** EXAMPLE OF A PANEL DATASET.

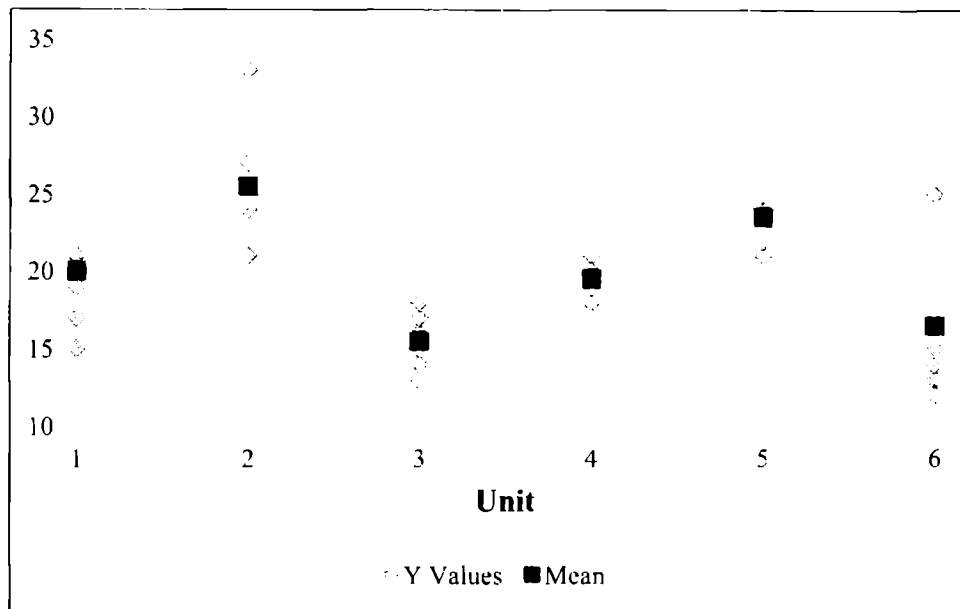
The data collected for this study is considered to be a panel dataset because it contains measures for the variables of interest across 25 states for the years 1975 and 1985 and across all 50 states for the years 1995, and 2005. Because the observations are not identical across all four time periods, the dataset is considered to be unbalanced (Eom, et al., 2008).

There are a number of advantages to pooling data and creating a panel dataset. First, state level research is often beleaguered by a small sample size. Pooling data by combining cross-sections increases the size of the  $n$  (Gujarati, 2003; Kennedy, 2003). This results in a larger  $n$ , which results in “more variability, less collinearity among variables, more degrees of freedom, and more efficiency” (Hsiao, 2003, p. 3). Specifically, panel data results in an  $n \times t$  dataset. If this design were purely cross-sectional,  $n$  would equal 50. However, two time periods have observations for 25 states, and two time periods contain observations for all 50 states, where  $n$  now equals 150. By increasing the size of the  $n$ , more variability has been introduced for the

variables of interest. This, in turn, reduces the threat of multicollinearity amongst the predictor variables, resulting in more efficient estimation (Kennedy, 2003).

Second, panel data are also better suited to explore variation that can't be captured in a single cross-section (Eom, et al., 2008; Kennedy, 2003). In the case of women and representation, the number of women in state legislatures has nearly quintupled since the early 1970's (CAWP, 2011a). A single cross-section of all 50 states for the year 1975 would not offer the opportunity to explore how an increase of descriptive representation affects the dependent variables, but by pooling the data one can see how an increase in descriptive representation affects substantive representation.

Third, panel data offer the researcher the ability to address unobserved heterogeneity (Baltagi, 2005; Hsiao, 2003). Unobserved heterogeneity refers to unmeasurable or unobservable differences across units (Torres-Reyna, 2011). In state-level analysis unobserved heterogeneity refers to state specific characteristics that do not vary over time, such as institutions, region and culture, to name a few (Baltagi, 2005; Eom, et al., 2008). These differences manifest themselves as varying means of the dependent variable across units (Bartels, 2008). Figure 3.4 graphs this relationship with sample data where the values of hypothetical dependent variables are plotted by unit. Each plotted value represents an observation for a given time period by a given unit. The difference in the means demonstrates the unobserved heterogeneity.



**Figure 3.4. UNOBSERVED HETEROGENEITY.**

Source (Bartels, 2008)

Failure to consider unobserved heterogeneity may result in omitted variable bias. Omitted variable bias impacts the ability to make a causal inference, is a threat to validity, and results in an increased chance of measurement error (Eom, et al., 2008). This results in erroneously attributing variance in the outcome variable to the predictor variables, and in the over- or under-estimation of parameters within the linear equation (Baltagi, 2005; S. E. Wilson & Butler, 2007). By controlling for the between-unit effects, one can correct this problem. In fact, the ability to address unobserved heterogeneity between units is often cited as the single greatest asset of panel data analysis (Kennedy, 2003).



When panel data analysis is conducted using the appropriate estimators, one controls for these unmeasurable or unobservable differences between units (Kennedy, 2003). In a standard linear equation the unobserved heterogeneity is found within the error term. When analyzing panel data, the assumptions one makes about the error term impact what estimator is utilized in analysis (Eom, et al., 2008; Gujarati, 2003). The next section offers a brief review of the three major types of panel data analysis.

### *Types of Panel Data Analysis*

There are three common ways in which to analyze panel data derived from nonrandomized, observational data, such as in the case with this dataset. This includes pooled Ordinary Least Squares (OLS), fixed effects, or random effects models (Halaby, 2004).

#### *Pooled Ordinary Least Squares*

Pooled OLS ignores unobserved heterogeneity, pools the data, and then analyzes the data with regular OLS (Gujarati, 2003). This requires researchers to make a number of assumptions about the dataset. First, the researcher must make the assumption that time and space are of no consequence in the research design and dataset (Bartels, 2008; Gujarati, 2003). This means that as time elapses, one assumes change does not occur. In addition, one also assumes that substantive differences do not exist across units. As such, the linear equation for pooled OLS is as follows (Eom, et al., 2008):

$$y' = \beta_0 + \beta_1 x_1 + \dots \beta_k x_k + v \quad (Eq. 3.1)$$

where

$k$  indicates the  $k$ th predictor variable

$\beta_0$  is the intercept

$\beta_k$  is the coefficient for each predictor variable

$v$  is the error term

Pooled OLS is also referred to as the constant coefficients model because the coefficients for each explanatory variable, as well as the intercept, are held constant (Yaffee, 2005).

Because of these assumptions, it is appropriate to use pooled OLS only when one has tested the data with appropriate diagnostic tests and determined that cross-sectional and temporal effects do not exist (Eom, et al., 2008). When unit and time effects do exist, pooled OLS is a biased and unreliable estimator that may produce statistically significant coefficients (Eom, et al., 2008; Gujarati, 2003). This increases the chance of making a Type I error, claiming that the predictor variable is significant, when it is not. Also, due to the nature of the data, OLS assumptions regarding homoscedasticity and auto-correlation are often violated (Yaffee, 2005). As discussed previously, pooling data increases the sample size and the variability within the dataset, which often results in a large number of studies incorrectly utilizing pooled OLS to analyze panel data (Bartels, 2008).

### *Fixed Effects*

Fixed Effects (FE) requires the researcher to ignore variance between units and to focus on variation over time within a single unit. Because of this, FE are often referred to as “within effects” (Yaffee, 2005). Unobserved heterogeneity, or variance between units, is often significant and may impact the outcome variable. When this happens the explanatory power of the independent variable is minimized or lost in the analysis (Torres-Reyna, 2011). To avoid bias, one can control for the unobserved heterogeneity and remove it from the analysis (Eom, et al., 2008).

To do this, characteristics unique to each state are held constant. It is assumed that these unique traits do not vary over time, yet may influence the relationship between the outcome and predictor variables (Torres-Reyna, 2011). Unit specific traits are referred to as “time-invariant” (Eom, et al., 2008). Within the FE model the unobserved heterogeneity is separated from the idiosyncratic error and held constant. In addition, the intercept is allowed to vary in the FE equation, which indicates that there may be state-specific traits that do not vary over time impacting the outcome variables (Gujarati, 2003). The equation for FE analysis is as follows:

$$y_{it} = \beta_{0i} + \beta_1 x_{it,1} + \dots + \beta_k x_{it,k} + a_{it} \quad (Eq. 3.2)$$

where

$i$  is the unit of observation  
 $t$  is the time period  
 $k$  indicates the  $k$ th predictor variable  
 $\beta_0$  is the intercept  
 $\beta_k$  is the coefficient for each predictor variable  
 $a$  is the idiosyncratic error term

The FE equation is derived from the error components model where the error term is comprised of two parts the unit specific error and the idiosyncratic error (Eom, et al., 2008).

$$v_{it} = u_i + a_{it} \quad (Eq.3.3)$$

where

$v_{it}$  is the composite error term  
 $u_i$  is the unit specific error  
 $a_{it}$  is the idiosyncratic error

As the subscripts indicate, the unit specific error does not vary over time, while the idiosyncratic error varies over time and units (Baltagi, 2005). As mentioned previously, to estimate the coefficients of the explanatory variables, unobserved heterogeneity is controlled for. This is done in one of two ways in the FE model. The first approach relies on the inclusion  $i-1$  unit-specific dummy variables within the equation. By including these dummy variables, one controls for the between unit variation found within the unobserved heterogeneity. This approach is also referred to as the Least Square Dummy Variable (LSDV) approach, due to the inclusion of dummy variables in the equation (Bartels, 2008).

Depending on the research questions and hypotheses, the use of dummy variables can be used to control for unobserved heterogeneity and to examine a number of different scenarios found within panel data (Gujarati, 2003; Hsiao, 2003). In the most common approach discussed previously, hypotheses are concerned with variation over time within a unit. FE models can also test hypotheses that focus on temporal effects by using a dummy variable for each time period. Similar to unit-specific effects, time-effects will result in intercepts that vary by time. If there is variation across unit and time, one would include dummy variables for both the unit and time period in the regression equation (Gujarati, 2003; Hsiao, 2003; Yaffee, 2005).

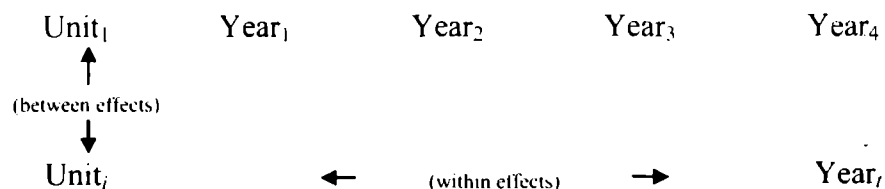
As one can imagine, inclusion of unit and/or time dummies in a linear equation will quickly eat degrees of freedom (Bartels, 2008). In order to conduct this type of analysis a fairly large dataset is necessary. This is often not the case when studying issues within US states. However, there is an alternate way to specify the regression equation for unit-specific FE (Cornwell & Kellough, 1994; Hsiao, 2003; Yaffee, 2005). Instead of including dummy variables for each state, one can figure the mean for the observations of each state. The data is then transformed by subtracting the state-specific mean from each observation. The regression is then conducted with the transformed data (Bartels, 2008; Eom, et al., 2008; Hsiao, 2006; Kennedy, 2003; Yaffee, 2005). This approach is referred to as the within effects

model, and the resulting parameter estimates are identical to the LSDV model (Park, 2009).

Because FE holds all the within unit unobserved effects constant, variables must vary over time. If variables are time-invariant they are removed from the regression equation. Unfortunately, this often results in a consistent estimator, but not the most efficient estimator (Baltagi, 2005). The next section reviews the random effects model.

### *Random Effects*

Where FE focuses on within unit effects, Random Effects (RE) focuses on variation within and between units (Eom, et al., 2008). It is appropriate to use RE if the researcher believes that effects within the unit in addition to effects between units affect the dependent variables (Torres-Reyna, 2011). Between fixed effects and random effects, the latter is the more efficient estimator and is able to utilize all data available to the researcher. Because of this, random effects should be utilized if diagnostic tests reveal that it is the appropriate estimator. Figure 3.5 revisits the panel dataset, illustrating between and within effects.



**Figure 3.5. BETWEEN AND WITHIN EFFECTS.**  
Source (Zorn, 2001)

The primary difference between FE and RE is with the treatment of unobserved heterogeneity. Recall that in FE the unobserved heterogeneity is controlled for to avoid introducing bias into the analysis (Eom, et al., 2008). In RE the unobserved heterogeneity is treated as a random variable (Eom, et al., 2008; Kennedy, 2003). In the RE model the error term varies across units and/or groups, representing the difference amongst groups.

This changes the way the intercept and the error term are treated. The FE model restricts the intercept so it is constant within a unit over time, but varies across units. In the RE model, which treats the unobserved heterogeneity as a random variable, the intercept is not restricted (Gujarati, 2003). The term random effects comes from the treatment of the intercept as a random variable (Bartels, 2008). As a review, the FE regression equation is as follows:

$$y_{it} = \beta_{0i} + \beta_1 x_{it,1} + \dots + \beta_k x_{it,k} + a_{it} \quad (Eq. 3.4)$$

However, with RE the intercept term is random, so it is appropriate to drop the  $i$ th subscript. The error term in the equation now represents unit deviation from the shared mean intercept value  $\beta_0$  (Gujarati, 2003). Note that  $u_i$  represents the unit specific error (Gujarati, 2003). The regression equation for the RE model is as follows:

$$y_{it} = \beta_{0I} + \beta_1 x_{it,1} + \dots + \beta_k x_{it,k} + a_i + u_{it} \quad (Eq. 3.5)$$

The following table concisely details the difference between the FE and RE models.

**Table 3.3.** Comparison of Fixed Effects and Random Effects Models.

|           | Fixed Effect Model             | Random Effect Model            |
|-----------|--------------------------------|--------------------------------|
| Intercept | Varies across unit and/or time | Constant                       |
| Error     | Constant                       | Varies across unit and/or time |
| Slopes    | Constant                       | Constant                       |

Source (Park, 2009)

Pooled OLS, FE and RE models should be selected carefully. Selection of the appropriate estimator should be aligned with the hypotheses, but selection should also remain true to the assumptions of each estimator. Fortunately, there are a number of diagnostic tests to determine the appropriate estimator for a panel dataset. The next section reviews the diagnostic tests used to determine the appropriate estimator.

#### *Panel Data Diagnostics*

Prior to beginning statistical analyses, one must determine if a Pooled OLS, FE or RE model is appropriate. Recall that this study has three dependent variables, which need to be analyzed with the panel data diagnostics independent of each other. From here on out, Models One, Two and Three refer to policy priorities, policy preferences, and policy outputs, respectively.

First, an incremental  $F$  test is used to determine if FE is the best model for the panel dataset. If the  $F$  statistic is significant, the null hypothesis will be rejected, and FE is the appropriate estimator for this model (Eom, et al., 2008). Model One (policy priorities) resulted in a significant test statistic ( $p < .01$ ), rejecting the null hypothesis.



This indicates significant unit effects. Model Two (policy preferences) and Model Three (policy outputs) also resulted in significant test statistics ( $p < .001$ ). At this point, it is clear that the FE estimator is favored over a pooled OLS in regards to all three models. However, it is important to consider the possibility of random effects.

The Lagrange Multiplier test tests for random effects. A significant test statistic indicates that RE is the most efficient estimator (Eom, et al., 2008; Park, 2009). Model One results in a significant test statistic ( $p < .01$ ), indicating that a RE model is a more efficient estimator than the Pooled OLS model. Models Two and Three also produce positive test statistics ( $p < .001$ ). Thus, an RE model is favored over a Pooled OLS model in regards to all three models.

The next diagnostic test determines whether a FE or a RE model is appropriate for the panel dataset. The Hausman specification test is used to compare the FE and RE models. The null hypothesis is that the individual effects are uncorrelated with the predictor variables (Eom, et al., 2008; Park, 2009). The FE model allows for this, while the RE model does not. Thus, if the null hypothesis is rejected then FE is the appropriate estimator for the model. If one uses the RE model when the error term and predictors are correlated, the model will produce biased estimates violating the estimator's assumptions (Eom, et al., 2008; Park, 2009).

The Hausman test results in a significant test statistic for Model One ( $p < .05$ ), indicating that the appropriate estimator for Model One is a FE model. Similarly, the Hausman test for Model Two also resulted in a significant test statistic ( $p < .01$ ).

Lastly, the Hausman test for Model Three was also significant ( $p < .001$ ). As a result, the appropriate estimator for all three models is the FE model. The following section discusses the FE panel data analysis for all three models.

### Statistical Analysis

Prior to any statistical analysis or panel data diagnostics, the data were imported into STATA v. 11.0, a statistical computer program. STATA was selected because it offers the computational power to run fixed effects analysis with relative ease. The data were organized in a “long” format, appropriate for panel data analysis, meaning that each unit/year was listed as a separate observation. The data were then verified through a review of observations, frequency distributions, and scatter plots to identify missing and unusual values. All inconsistent and incorrect entries were fixed, as necessary.

This research design is interested in describing and making inferences concerning the panel dataset. In order to describe the data, descriptive statistics were generated for all dependent and independent variables. This offers both visual and statistical methods to examine the data. Frequency distributions and graphs offer a simple way to look at the general characteristics of the data. Histograms, pie charts, and scatter plots are all useful in visually examining the data. Summary measures use statistics to look at the center of the observations, as well as the range of the observations. Measures of central tendency include the mean, median, mode, and measures of dispersion include the range, variance, and standard deviation (Chavda,

2008). Lastly, a correlation matrix examining relationships between the dependent and independent variables also offers useful information. Results of the descriptive statistics are included in Chapter Four. The following three sections detail the FE analysis and regression diagnostics for each individual model.

#### *Model One: Policy Priorities*

##### *Fixed Effects*

I conducted the fixed effects analysis using the demeaned variables for Model One. Policy priorities was regressed on descriptive representation, political party influence, women's caucus, political ideology, and gender opportunity structure, holding within unit effects constant. In doing so, the intercept is allowed to vary across units, while the slope and the error term are held constant. The results of the FE analysis are discussed in Chapter Four.

##### *Regression Diagnostics*

After running a regression analysis using the demeaned variables, standard regression diagnostics were checked to ensure that the data met the typical assumptions regarding fixed effects analysis. This includes checking for unusual and influential data, normality, linearity, multicollinearity, strict exogeneity, homogeneity of variance, and independence of errors. A complete list of the fixed effects assumptions can be found in Appendix D. If the assumptions for fixed effects analysis are met, the estimator is the best linear unbiased efficient estimator (Wooldridge, 2006).

*Unusual and Influential Data.* Values on variables that are significantly different from all other values may change the results of the regression analysis. The transformed variables (demeaned variables) were examined three different ways in order to identify any suspect observations analyzing outliers, leverage and influence (Fox, 1991).

First, to examine potential outliers, simple scatter plots graphing both the dependent and independent variables demonstrated that several observations may pose a problem for Model One, including Arizona (1985), Kansas (1975), and Oklahoma (1975). Next, the studentized residuals were examined with both stem and leaf plots and an ordered list to determine if there were any studentized residuals exceeding the value of 2.0, the standard threshold (Fox, 1991). This also resulted in a number of potential outliers for Model One.

Leverage offers an additional method to assess influential observations. An observation is considered to have a high degree of leverage when the value is greater than  $(2k+2)/n$ , where  $k$  is the number of independent variables and  $n$  is the number of observations (Fox, 1991). In this case a value greater than .08 demonstrates a greater degree of influence. Again, there were a number of observations that breached the .08 threshold for Model One.

Cook's D and DFITS are both computed to find any observations that have a large amount of overall influence looking at both the residuals and the leverage (Fox, 1991). When analyzing Cook's D, an absolute value greater than  $4/n$  indicates an

observation with a high degree of influence. In this case the cutoff point is an absolute value greater than .0267. Lastly, DFITS highlights influential observations where an absolute value greater than  $2\left(\sqrt{\frac{k}{n}}\right)$ , or .365 poses a potential problem. Again, a number of observations were highlighted as potential influential observations.

After determining which observations were consistently tagged as outliers or with a high degree of leverage or influence, they were checked to ensure that they were not entered incorrectly, that they did not contain missing data, and they were part of the population sampled. Next, the problematic observations were eliminated from the regression for Model One, including Kansas (1975), Oklahoma (1975), New Jersey (2005), Virginia (2005), and New Jersey (1995). Removing the variables from the regression significantly altered the coefficient estimate for descriptive representation and gender opportunity structure for Model One. These observations are unusual in that they result in a higher than average level of substantive representation despite extreme levels of descriptive representation and/or gender opportunity structure. Because these values belong within the sample they will remain in the analysis, but discussion of the results will take into consideration the impact that these outliers have on the sign and significance of the coefficients (Wooldridge, 2006).

*Normality:* Normality of the residuals is a FE assumption that must be met for hypothesis testing and the use of the significance tests, but is not necessary for efficient estimation of the coefficients (Grady & Wang, 2008). This research design is concerned with both the size and sign of the coefficients, in addition to the significance of the coefficients.

First, the kernel density plot with a normal distribution overlay was used for visual identification of the distribution of the residuals (Fox, 1991). Model One appeared to be normally distributed. Next, plots commonly used to examine normality were assessed including the normal probability plot and the quartile plot (Tabachnick & Fidell, 2001). These plots illustrate a non-normal distribution in the middle of the distribution and near the tails of the distribution, respectively (Fox, 1991). In regards to Model One, the two plots revealed a near normal distribution of the residuals. The quartile plot, sensitive to outliers at the tails, offered another illustration of how Oklahoma (1975) is an outlier, falling outside the normal distribution.

Lastly, examination of the interquartile range and the Shapiro-Wilk test both numerically examine the distribution of the residuals. The first numerical test did not reveal any severe outliers, indicating a normal distribution. The Shapiro-Wilk test tests the null hypotheses that the distribution is normal. The  $p$  value of .44 was insignificant, failing to reject the null hypothesis. The combination of visual and numerical tests reveals that the distribution of the residuals for Model One is normal.

*Linearity.* Fixed effects is a linear model, so one assumes that a linear relationship between the predictor variables and the dependent variables exists. If the relationship is not linear the results are weakened (Tabachnick & Fidell, 2001). One can assess linearity using both scatter plots graphing the dependent variables against the independent variables, or one may also analyze scatter plots that graph the residuals against the fitted values (Fox, 1991; Tabachnick & Fidell, 2001).

Examination of the residuals versus fitted plot reveals that a weak linear relationship does exist between the dependent and independent variables.

*Strict Exogeneity.* Strict exogeneity assumes that the error term in any given time period is uncorrelated with the predictor variables for that time period and for all other time periods. If this assumption holds, the FE estimator is unbiased and consistent (Wooldridge, 2006). This assumption can be tested by regressing the outcome variable on two values of the predictor variables, the present value and the future value. A Hausman test following the regression tests the null hypotheses that the covariates and the errors are uncorrelated. The test statistic for Model One ( $p = .98$ ) demonstrates that the model met the assumption.

*Multicollinearity.* The assumption of multicollinearity addresses the relationship between the independent variables. If two or more variables are highly correlated, the coefficient estimates become unstable and may vary dramatically with small changes in the model. While analysis of all of the variables remains unchanged, individual predictions for each variable may not be valid (Grady & Wang,

2008; Tabachnick & Fidell, 2001). Testing for multicollinearity is a simple procedure. The variance inflation factor (VIF) and tolerance both measure the degree of collinearity, where a value of 10 or 1/10 indicate potential multicollinearity (Fox, 1991). A mean VIF value of 2.04 demonstrates that the independent variables are not collinear.

*Homoscedasticity.* The homogeneous variance of residuals is a main FE assumption. Failure to check for and account for potential heteroskedasticity leads to unbiased estimates, but it does result in inflated variance and invalid *t*-tests (Grady & Wang, 2008). Similar to tests for normality, both visual and statistical tests assist in determining if the assumption was met (Fox, 1991). A simple plot of residuals versus fitted values demonstrates an even distribution. A non-uniform distribution is a visual indication that the assumption has been violated (Fox, 1991). Second, the Modified Wald test tests the null hypothesis that the variance of residuals is homogeneous. The *p* value (<.001) is significant, rejecting the null hypothesis. Model One violates the assumption of homoscedasticity. In order to control for heteroskedasticity Model One will be re-specified using robust standard errors.

*Autocorrelation.* The final fixed effects assumption tested here is the independence of errors, or autocorrelation. Positive autocorrelation results in smaller error variance and an increase in the likelihood of a Type I error. A negative autocorrelation inflates the error variance resulting in a loss of power (Tabachnick & Fidell, 2001). Because this panel dataset contains four non-sequential time periods,



autocorrelation is not expected. A Lagrange-Multiplier test for serial correlation tests the null hypothesis that the errors are independent of each other. An insignificant test statistic of  $p$  equal to .39 demonstrates that the errors are independent for Model One.

### *Model Two: Policy Preferences*

#### *Fixed Effects*

I implemented the fixed effects analysis using the demeaned variables for Model Two. Policy preferences was regressed on descriptive representation, political party influence, women's caucus, political ideology, and gender opportunity structure, holding within unit effects constant. The results of the fixed effects analysis are discussed in Chapter Four.

#### *Regression Diagnostics*

After running a regression analysis using the demeaned variables, standard regression diagnostics were checked to ensure that the data met the typical assumptions regarding fixed effects analysis. The diagnostics and assumptions were checked according to the methods outlined previously. Specifically, four observations were identified as having unusual influence, Montana (2005), North Dakota (1995), Kansas (1975) and New Hampshire (1995). Removal of these observations from the regression equation drastically changed the standard error and  $t$  values for both the citizen ideology and gender opportunity structure variables. It did not alter the significance level or the direction of the relationship for gender opportunity structure, but it did change the significance level of citizen ideology. These observation will

remain in the regression, but discussion of the results will take into consideration the impact that these outliers have on the significance of the coefficient (Wooldridge, 2006).

The residuals were then checked for normality. Both the normal probability plot and quartile plot demonstrated potential non-normality in the middle and at the tails of the distribution. The Shapiro-Wilk test confirmed the visual evidence, with a significant test statistic ( $p < .001$ ). However, a normal distribution of errors is not necessary for a fixed effects estimator to be the best linear unbiased efficient estimator. A normal distribution simply ensures that one can make inferences based on the  $t$  statistics. When one does not have a normal distribution, the sample size must have a large  $n$  and a small  $t$  (Wooldridge, 2002). This dataset meets the requirements, allowing for inference despite a non-normal distribution of the residuals. Lastly, examination of the residual versus fitted plot demonstrates a linear relationship.

In regards to the FE assumptions, the test for strict exogeneity ( $p = .054$ ) proves that Model Two meets the assumption. As reported earlier, a VIF value of 2.05 demonstrates that the independent variables are not collinear. The Modified Walt test for heteroskedasticity resulted in a test statistic of  $p < .001$ , indicating heteroskedasticity. As a result, Model Two will be re-specified using robust standard errors to control for heteroskedasticity. Lastly, the Lagram-Multiplier test resulted in

an insignificant test statistic ( $p = .46$ ), indicating that the errors are not serially correlated.

### *Model Three: Policy Outputs*

#### *Fixed Effects*

The FE analysis was implemented using the demeaned variables for Model Three. Policy outputs was regressed on descriptive representation, political party influence, women's caucus, political ideology, and gender opportunity structure, holding within unit effects constant. The results of the fixed effects analysis are discussed in Chapter Four.

#### *Regression Diagnostics*

After running a regression analysis using the demeaned variables, standard regression diagnostics were checked to ensure that the data meet the typical assumptions regarding fixed effects analysis. Specifically, four observations were identified as having unusual influence, Delaware (1995, 2005), Illinois (1975), New Hampshire (1975). Removal of these observations from the regression equation changed the standard error and  $t$  values for the gender opportunity structure variable. However, it did not alter the significance level or the direction of the relationship. The outliers were checked for accuracy, and were kept in the analysis.

The residuals were checked for normality and the Shapiro-Wilk test statistic ( $p = .58$ ) demonstrates a normal distribution of the residuals. Examination of the residuals versus fitted values plot demonstrates a linear relationship. The test for strict

exogeneity ( $p=.91$ ) proves that Model Three meets the assumption. The Modified Walt test for heteroskedasticity resulted in a test statistic of  $p < .001$ , indicating heteroskedasticity. As a result, Model Three will be re-specified using robust standard errors to control for heteroskedasticity. Lastly, the Lagram-Multiplier test resulted in an insignificant test statistic ( $p = .68$ ), indicating that the errors are not serially correlated.

### Limitations

Every research design is faced with unique challenges to the reliability and validity of both the measures and the results. Awareness and consideration of these threats can improve the quality of the research design. This section details the threats to reliability and validity specific to this research design and the steps taken to mitigate their effects.

### *Reliability*

Reliability is concerned with consistency. A reliable measure is easily replicated with consistent results. This entails developing definitions that are clear and distinct, without ambiguity or confusion. This is done with the hopes of reducing measurement error and improving the quality of the measures (Johnson, 2010). The elimination of measurement error is impossible, but the use of reputable secondary data sources reduces the potential of introducing unreliable measures into the research design. The data for the independent variables are from reputable sources for secondary data, such as the US Census Bureau, National Conference of State

Legislatures and the Center for American Women and Politics. When data for a variable was not comprehensive, triangulation of sources verified the accuracy of the data.

Data for the dependent variable represents the greatest threat to reliability within this research design. As discussed earlier, the dependent variables were developed as a result of the coding of legislation within all 50 states for two time periods, and 25 states for an additional two time periods. Identifying legislation as women's interest legislation could be rife with bias and error. As a result, steps were taken to reduce error and to increase consistency and the replicability of the measurement procedures. Common steps to reducing bias and error include identifying the material to be coded and the boundaries of the analysis, as well as establishing definitions within the coding framework (Bowen & Bowen, 2008).

First, rules regarding the bills to be coded were clearly established, as were the boundaries of the analysis. Bills were coded based upon substantive content for the legislative sessions of the lower chamber in the year 1975, 1985, 1995, and 2005. Coding was restricted to legislation proposing new laws and did not include resolutions, memorials or budget bills. Bills focused on women, but in direct contrast to social, economic, or political advancement of women, were not included. Second, the definitions within the coding framework were established based upon the definition developed by (Bratton, 2002), which was then supplemented with research and publications by leading organizations and authors. This resulted in a

comprehensive list of women's interest legislation applicable to this framework. In doing so, it offered a concrete and unambiguous selection of women's interest legislation to be coded in the analysis.

Further, to reduce measurement error, the coding framework was tested for all four time periods with two different states. The system was refined and systemized before the final coding process commenced. The goal was to reduce bias and measurement error, and to increase reliability. In order to further improve reliability of this research design, it would be useful to test the reliability of the measures by utilizing multiple coders for a small sample of the states within the research design. As a result, one could assess consistency with a measure of inter-rater reliability.

### *Validity*

#### *Internal Validity*

Internal validity is concerned with causality within a research design (Giannatasio, 2008). In checking internal validity one ensures that the change in the independent variables occurred as a result of a change in the dependent variables. Within this research design there are two threats to internal validity. The first threat refers to time. The unit of analysis is a state legislative session, which occurs over a period of time. When including independent variables within the model, one must consider temporal precedence. In order to minimize the threat to internal validity, the two variables representing extra-institutional dynamics, state citizen ideology and

gender opportunity structure, were lagged by one year to establish temporal precedence.

The second threat to internal validity is in regard to statistical regression. When referring to statistical regression in light of internal validity, one is referring to the inclusion of outliers within the analysis. Statistically speaking, it is expected that extreme scores regress towards the mean, and so, when measured at a different time, will not produce an outlying score (Giannatasio, 2008). As briefly discussed in the Statistical Analysis section, there are a number of outliers that impact the results of the statistical analysis. Inclusion of these values within the model was done with careful consideration to minimize threats to internal validity. In addition, discussion of the results also includes consideration of the statistical outliers and the impact they have on the relationships under study.

Lastly, internal validity is threatened by the chance that other variables, other than those used in the analyses, cause the change in the dependent variable resulting in model misspecification. This is especially true for non-experimental research. The typical response is to include control variables within the analysis. However, the use of specific controls, their measurement, and the results are arguable and offer additional ways in which to introduce bias into the research design. Fixed effects is a useful tool in that it controls for unit-specific, time-invariant characteristics that may impact the dependent variables (Wooldridge, 2002). Thus, the statistical analysis also

helps to bolster the internal validity of this research design due to the nature of the fixed effects estimator.

### *External Validity*

External validity is concerned with generalizeability, which refers to the degree in which relationships under study will apply in different settings, at different times, or with different units (Giannatasio, 2008). One of the greatest threats to external validity regards the selection of states. This research design looks at four cross-sections of US states in 1975, 1985, 1995, and 2005. Due to the availability of data, the 25 states selected for the 1975 and 1985 time periods were selected based upon convenience. The chances of a convenience sample approximating the population are not as great as a random sample (Northrop & Arsneault, 2008). However, the selection of 25 states varies by region as well as demographically, politically, and economically. While not a random sample, nor a complete analysis of all 50 states, this research design does improve upon the common research design analyzing a small sample of six to twelve states. Further, the remaining two time periods contain measures for all 50 states, improving the external validity of the research design.

### *Summary*

This chapter reviewed the research design employed within this study. A brief summary of the theoretical model followed by the research question and hypotheses set the framework and justification for the research methods. Next,



operationalization and measurement of each variable were clearly explained, and the data collection procedures provided a road map for both clarity and replicability. Discussion of the statistical analysis included a description of panel data analysis, diagnostics, and fixed effects analysis and its assumptions. The chapter concluded with a discussion of the potential threats to reliability and validity and the steps taken to mitigate their effects. The next chapter details the results of the statistical analysis.

## CHAPTER FOUR:

### RESULTS

Chapter Four provides a detailed review of the results from the statistical analysis. The chapter is divided into four sections, a section for the descriptive statistics and a section for each statistical model. This chapter is reserved for a review of the findings, with a focus on significant or relevant findings. A thorough discussion and interpretation of the results are located in Chapter Five.

#### Descriptive Statistics

Descriptive statistics allow the researcher to become familiar with the data, to explore unique characteristics of the data, and to discover relationships amongst the variables. First, I examined the unique characteristics of the data by analyzing the measures of central tendency and measures of dispersion. Panel data offers the unique opportunity to examine these summary measures across states, as well as within states. As such, one can get a better idea of the variation of each variable.

Table 4.1 offers the summary measures for the dependent variables. Recall that policy priorities is operationalized as bill introductions, and is measured as a percent of total. Here the overall mean of policy priorities is .028. This indicates that of the bills introduced in any given state legislature within any time period, an

average of 2.8% is categorized as women's interest legislation. The standard deviation across all states and time periods is 1.07, or approximately 1%. When looking at the standard deviation between and within states, one can see that the dispersion is similar both within a state and across states across all four time periods.

**Table 4.1.** Descriptive Statistics for the Dependent Variables.

| Variable           |         | Mean  | Standard Deviation | Range<br>Min      Max |       |
|--------------------|---------|-------|--------------------|-----------------------|-------|
| Policy Priorities  | Overall | 2.80  | 1.07               | 0.75                  | 06.34 |
|                    | Between |       | 0.74               |                       |       |
|                    | Within  |       | 0.77               |                       |       |
| Policy Preferences | Overall | 94.56 | 5.43               | 73.58                 | 100.0 |
|                    | Between |       | 3.80               |                       |       |
|                    | Within  |       | 4.00               |                       |       |
| Policy Outputs     | Overall | 37.81 | 23.02              | 0.000                 | 1.000 |
|                    | Between |       | 21.20              |                       |       |
|                    | Within  |       | 11.57              |                       |       |

The second dependent variable is policy preferences, operationalized as roll-call votes. The overall mean roll-call vote for all women's interest legislation that received a vote is 94.56, indicating that the average number of Aye votes, measured as a percent of total, across all bills is approximately 95%.

The final dependent variable is policy outputs. This is measured as the percent of women's interest legislation that passed the lower chamber. The mean indicates that on average, across all states and time periods, approximately 37% of the women's interest legislation that was introduced passed the lower chamber. The

standard deviation of 23.02 indicates that there was a fair degree of variability in this passage rate, as also indicated by the range. Here a value of 0 and 1 indicate that either 0% or 100% of the women's interest legislation that was introduced passed the lower chamber. The standard deviation between and across states demonstrates that there is greater variation between states, than within a state.

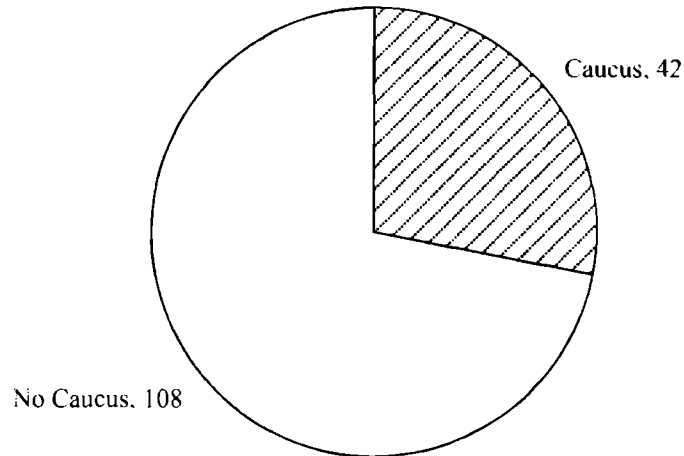
Descriptive statistics for the independent variables can be found in Table 4.2. Again, the summary measures are tabulated within states, between states, and overall. Descriptive representation is measured as the percent of female representatives in the lower chamber. The mean of 19.61 indicates that across all states and time periods the average number of female representatives is close to 20% within the lower chamber. The standard deviation and range indicate that the dispersion is quite high. This is logical given that this includes observations for all four time periods, including 1975 and 1985 when women were a rarity in elected office. Return to Figure 2.2 in Chapter Two for an illustration of change in women's descriptive representation over time at the state and federal level.

**Table 4.2.** Descriptive Statistics for the Independent Variables.

| Variable                     |         | Mean  | Standard Deviation | Range<br>Min | Max    |
|------------------------------|---------|-------|--------------------|--------------|--------|
| Descriptive Representation   | Overall | 19.61 | 8.95               | 1.00         | 40.48  |
|                              | Between |       | 6.90               |              |        |
|                              | Within  |       | 5.72               |              |        |
| Political Party Influence    | Overall | .5409 | 17.75              | 18.57        | 100.00 |
|                              | Between |       | 15.97              |              |        |
|                              | Within  |       | 9.02               |              |        |
| Citizen Political Ideology   | Overall | 47.32 | 15.06              | 7.49         | 85.28  |
|                              | Between |       | 14.15              |              |        |
|                              | Within  |       | 6.29               |              |        |
| Gender Opportunity Structure | Overall | 2.998 | .6733              | 1.436        | 4.218  |
|                              | Between |       | .3734              |              |        |
|                              | Within  |       | .5661              |              |        |

Recall that political party influence is the percentage of seats held by the Democrats in the lower chamber of the state legislature. Citizen ideology and gender opportunity structure are composite indices measuring liberal ideology and gender relations in each state, respectively. In regards to political party influence and citizen ideology you can see the standard deviation is much larger between states, than within states indicating a more stable environment within any given state than across many different states. This is consistent with existing research. Fixed effects analysis controls for this variation by only analyzing variation within a state. On the other hand, the gender opportunity structure has more variation within a state, than between states. This also is logical given the drastic changes in women's education, labor force participation and marital status in the past 40 years.

Lastly, Figure 4.1 offers the frequency for the categorical variable women's caucus across all states and time periods. Here you can see that of the 150 observations, approximately 30% had a women's caucus. Keep in mind that this is over all four time periods. The percentage of state legislatures with a women's caucus has shifted over time increasing from 8% in 1975, to 20%, 34% and 36% in 1985, 1995, and 2005, respectively.



**Figure 4.1.** FREQUENCY FOR WOMEN'S CAUCUS VARIABLE.

Table 4.3 offers the correlations between the independent and dependent variables. The direction, strength and significance of the correlations is of interest within this research design. While the hypotheses rely on multivariate relationships, there is still value in looking at bivariate relationships. Here, there are several points of interest found within the correlation matrix.

**Table 4.3.** Intercorrelations Between Dependent and Independent Variables.

|                                  | 1                  | 2                  | 3                  | 4                  | 5                  | 6                 | 7               |
|----------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-----------------|
| 1. Policy<br>Priorities          | –                  |                    |                    |                    |                    |                   |                 |
| 2. Policy<br>Preferences         | -.03<br>(.7465)    | –                  |                    |                    |                    |                   |                 |
| 3. Policy Outputs                | -.32***<br>(.0001) | -.32***<br>(.0001) | –                  |                    |                    |                   |                 |
| 4. Descriptive<br>Representation | .04<br>(.6582)     | .20*<br>(.0146)    | .18<br>(.1518)     | –                  |                    |                   |                 |
| 5. Political Party<br>Influence  | -.08<br>(.3115)    | .06<br>(.4801)     | -.30***<br>(.0002) | -.39***<br>(.0000) | –                  |                   |                 |
| 6. Women's<br>Caucus             | .04<br>(.6282)     | .17*<br>(.037)     | -.14<br>(.0895)    | .14<br>(.0922)     | .33***<br>(.0000)  | –                 |                 |
| 7. State Citizen<br>Ideology     | .05<br>(.5094)     | .13<br>(.1056)     | -.26**<br>(.0014)  | .27***<br>(.0008)  | .15<br>(.0740)     | .27***<br>(.0007) | –               |
| 8. State Gender<br>Structure     | .08<br>(.3045)     | .29***<br>(.0004)  | -.02<br>(.08219)   | .70***<br>(.0000)  | -.36***<br>(.0000) | .18*<br>(.028)    | .20*<br>(.0129) |

Note:  $p$  values in parentheses, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Column one gives the correlations for policy priorities and all other variables. It is interesting to note that the relationship between the dependent variable and the independent variables are small and statistically insignificant suggesting a weak relationship. The direction of the relationship is expected to be positive for all five independent variables, yet the relationship between the dependent variable and political party is negative. This counters existing research, and is worth further consideration.

The second dependent variable, policy preferences, fares better. Three of the five independent variables have a statistically significant relationship with the dependent variable. The gender opportunity structure is significant ( $p < .001$ ) indicating a strong linear correlation with policy preferences. Descriptive representation ( $p < .05$ ) and women's caucus ( $p < .05$ ) also demonstrate a statistically significant linear correlation with policy preferences. Last, while political party and citizen ideology are not statistically significant, they do demonstrate a positive relationship, as hypothesized within both the literature and this research design.

The third and final dependent variable, policy outputs, presents contradictory results. Of the five independent variables, two are statistically significant. Political party, significant at the  $p < .001$  level, also shows a negative relationship with the dependent variable. This indicates that as one variable increases, the other decreases, but it is often thought that the share of seats held by Democrats is positively related to substantive representation. Likewise, citizen ideology is also negatively correlated



with the dependent variable ( $p < .01$ ), but it is theorized that a more liberal citizen ideology is positively correlated to substantive representation. Lastly, the direction of the relationship for both women's caucus and gender opportunity structure are also negative. However, in regards to gender opportunity structure, the strength of the relationship is so small the relationship between the two variables is almost nonexistent. Only descriptive representation is positively correlated to policy outputs, yet the correlation is not statistically significant.

When looking at the correlations between the independent variables a number of interesting relationships appear. Descriptive representation is positively related to both citizen ideology ( $p < .001$ ) and gender opportunity structure ( $p < .001$ ). This indicates that there is a positive relationship between civil society factors and the descriptive representation of women. Political party is positively correlated with women's caucus ( $p < .001$ ), providing evidence that the presence of a women's caucus is more likely when Democrats hold a greater percentage of seats. Women's caucus is also positively correlated with citizen ideology ( $p < .001$ ), indicating a positive relationship between a women's caucus and a liberal citizen ideology within a state. Citizen ideology also demonstrates strong correlation with gender opportunity structure ( $p < .05$ ). Despite the strength of the correlations between the independent variables, the test for multicollinearity discussed in Chapter Three revealed a Variance Inflation Factor of 2.04, well below the commonly accepted limit.

Descriptive statistics are a simple way to examine data, and to develop a sense of the variation of the variables. Bivariate analysis of the dependent and independent variables offers a preliminary analysis of existing relationships. Within this research design, the relationship between the dependent and independent variables is often weak and statistically insignificant, raising a few warning flags in regards to the utility of the three models. Yet, relationships often change when moving from bivariate to multivariate analysis. In addition, FE analysis focuses on change over time within a state, which may also alter the nature of the relationship between variables. The following three sections discuss the results for each dependent variable.

#### Model One: Policy Priorities

The fixed effects analysis was implemented using the demeaned variables for Model One. Policy priorities was regressed on descriptive representation, political party influence, women's caucus, citizen ideology, and gender opportunity structure, holding within unit effects constant. As discussed in Chapter Three, the assumptions were checked and the assumption of homoscedasticity was violated. As a result, robust standard errors were used to control for heteroskedasticity. In addition, a number of outliers influence the results of the regression. The results reported below display the results for all observations, but the influence of the outliers is also discussed.

Table 4.4 reveals the results for Model One. In this model, only one variable neared statistical significance, descriptive representation, while the remaining four independent variables remained statistically insignificant. For a given state, as descriptive representation increases across time by one unit, substantive representation increases by .0441 units, holding all else constant. The significance level was at the 10% level, indicating that one can only be 90% sure that the coefficient one is estimating will fall within the range of the confidence interval. A more standard significance level is set at the 5% level. Finally, the adjusted R squared value was .25 indicating that the model was able to explain 25% of the variance in the outcome variable.

**Table 4.4.** Fixed Effects Results for Model One: Policy Priorities ( $n = 150$ ).

|                                    | Coefficient | Unstandardized<br>Coefficient | Robust<br>Standard<br>Error | $t$  | $p$   |
|------------------------------------|-------------|-------------------------------|-----------------------------|------|-------|
| Descriptive<br>Representation      | .0441       | .3280                         | .0229                       | 1.93 | .06   |
| Political Party<br>Influence       | .0018       | .0206                         | .0118                       | .15  | .882  |
| Women's<br>Caucus                  | .0033       | .0917                         | .003                        | 1.11 | .271  |
| Citizen<br>Ideology                | -.00006     | -.0515                        | .0001                       | -.52 | .606  |
| Gender<br>Opportunity<br>Structure | -.0017      | -.1278                        | .0028                       | -.61 | .544  |
| Constant                           | .0257       |                               | .0119                       | 2.15 | .036* |

Note: Adjusted  $R^2$  .2467,  $F(5, 145) = 2.31$ ,  $p < .05$   
 Two-tailed  $p$  values, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

In Chapter Three a number of extreme outliers were examined based on their leverage and influence on the coefficient estimates. Specifically, Kansas (1975), Oklahoma (1975), New Jersey (1995), New Jersey (2005) and Virginia (2005) were consistently tagged as extreme outliers with an unusual amount of influence. Further

analysis revealed that the observations were entered correctly and contained accurate data. It became obvious from examination of various scatter plots that these observations had a higher or lower than average level of substantive representation despite extreme levels of descriptive representation and/or gender opportunity structure. When the observations were removed from the model, the  $t$  value for descriptive representation shifted, and, subsequently, the significance level ( $p < .05$ ) shifted, as well. For a given state as descriptive representation varies across time by one unit, substantive representation increases by .0423 units, holding all else constant.

Removing the outliers did not dramatically alter the size or direction of the coefficient, but it did change the level of significance. The coefficient of .0441, using all observations, is quite small. In regards to Model One and Hypothesis One, we reject the null hypothesis. An increase in descriptive representation results in higher rates of substantive representation.

The remaining independent variables were not statistically significant. When looking at the size of the coefficients, the coefficient for citizen ideology is so nearly close to zero that it is indicative of an absence of a linear relationship between bill sponsorship and citizen ideology within this model. The correlations in Table 4.3 also demonstrate that the bivariate relationship is very weak ( $r = .04$ ).

The size of the coefficients for political party and gender opportunity structure were both quite small, whereas the effect size of the women's caucus variable, while statistically insignificant, did have a larger coefficient nearing the value of descriptive

representation. This is not surprising given the weak bivariate relationships found within the correlations matrix.

The direction of the effect is positive for political party influence and women's caucus, which is as hypothesized. However, the direction of the effect for citizen ideology and gender opportunity structure is negative, which contradicts the hypothesized relationship. Omitting influential outliers shifts the direction of the gender opportunity structure coefficient, which then concurs with the hypothesized relationship. Within Model One the null hypothesis for  $H_1$  is rejected. Due to the statistically insignificant coefficients for political party influence, women's caucus, citizen ideology, and gender opportunity structure, we fail to reject the null hypothesis for the second, third, fourth and fifth hypotheses in regards to Model One.

#### Model Two: Policy Preferences

The fixed effects analysis was implemented using the demeaned variables for Model Two. Policy preferences was regressed on descriptive representation, political party influence, women's caucus, political ideology, and gender opportunity structure, holding within unit effects constant. As discussed in Chapter Three, the assumptions were checked and the assumption of homoscedasticity was violated. As a result, robust standard errors were used to control for heteroskedasticity. In addition, a number of outliers influence the results of the regression. The results reported below contain all observations, but the influence of the outliers will also be discussed.

Table 4.5 reveals the results for Model Two. Within this model not one of the five coefficients are statistically significant. Overall, however, the *t* values are larger within this model, as compared to Model One. This is not surprising given the bivariate relationships displayed in Table 4.3. The adjusted R-squared value was .30 indicating that the model was able to explain 30% of the variance in the outcome variable.

**Table 4.5.** Fixed Effects Results for Model Two: Policy Preferences (*n* = 150).

|                                    | Coefficient | Unstandardized<br>Coefficient | Robust<br>Standard<br>Error | <i>t</i> | <i>p</i> |
|------------------------------------|-------------|-------------------------------|-----------------------------|----------|----------|
| Descriptive<br>Representation      | .1793       | .2564                         | .1280                       | 1.40     | .168     |
| Political Party<br>Influence       | -.0655      | -.1409                        | .0560                       | -1.17    | .248     |
| Women's Caucus                     | -.0046      | -.0264                        | .0144                       | -.32     | .748     |
| Citizen Ideology                   | -.0007      | -.0994                        | .0006                       | -1.07    | .288     |
| Gender<br>Opportunity<br>Structure | .0053       | .0815                         | .0140                       | .38      | .708     |
| Constant                           | .9622       |                               | .0535                       | 17.97    | .000***  |

Note: Adjusted  $R^2$  .3012,  $F(5, 145) = 6.15$ ,  $p < .001$

Two-tailed *p* values, \**p* < .05, \*\**p* < .01, \*\*\**p* < .001

Within Model Two, the FE analysis tests the relationship between descriptive representation and policy preferences across time within each state, holding all other variables constant. Here the size and effect of the coefficient (.1793) is both positive and large, but does not reach significance. This coefficient is quite large and worthy of note, especially in comparison to the other coefficients in this model, the greatest of which is just 1/3 the size of the coefficient for descriptive representation. Despite this, the coefficient did not reach statistical significance, and we fail to reject the null hypothesis for  $H_1$ .

The coefficients for political party influence and women's caucus were both negative and statistically insignificant. Of these two, political party resulted in a larger coefficient, but, again, it too failed to reach significance. Thus we fail to reject the null hypothesis for  $H_2$ . The coefficient for women's caucus was quite small, and we also fail to reject the null hypothesis for  $H_3$ .

In Chapter Three a number of extreme outliers were examined based on their leverage and influence on the coefficient estimates. Specifically, Kansas (1975), New Hampshire (1995), North Dakota (1995), and Montana (2005) were consistently tagged as extreme outliers with unusual amount of influence. Further analysis revealed that the observations were entered correctly and contained accurate data. Removal of these observations from the regression equation drastically changed the standard error and  $t$  values for both the citizen ideology and gender opportunity structure variables. It did not alter the significance level or the direction of the



relationship for gender opportunity structure, but it did change the significance level of citizen ideology. When the observations were removed from the model, the coefficient for citizen ideology became significant ( $p < .05$ ). Here as citizen ideology increases by one unit, becoming more liberal, the average number of ayes decreases by .1%. Given that the average value for this variable is 95% with a standard deviation of 5%, the size of the effect is very small. However, this relationship is not as hypothesized, and within Model Two, we fail to reject the null hypothesis for  $H_4$ .

The only other positive coefficient within Model Two is gender opportunity structure. Here the size of the coefficient is small, as is the  $t$  value, resulting in a statistically insignificant coefficient. Thus we fail to reject the null hypothesis for  $H_5$ . The next section reviews the results for the final model.

### Model Three: Policy Outputs

The fixed effects analysis was implemented using the demeaned variables for Model Three. Policy outputs was regressed on descriptive representation, political party influence, women's caucus, citizen ideology, and gender opportunity structure, holding within unit effects constant. As discussed in Chapter Three, the assumptions were checked and the assumption of homoscedasticity was violated. As a result, robust standard errors were used to control for heteroskedasticity.

Table 4.6 reveals the results for Model Three demonstrating that not one of the five coefficients are statistically significant. The adjusted R-squared value was extremely high, given the insignificant coefficients. The adjusted R-squared value of

.62 indicates that the model was able to explain 62% of the variance in the outcome variable. Because the variables are statistically insignificant, this indicates that most of the variation in the dependent variable is found within the state specific effects that are fixed over time. However, with fixed effects analysis it is more fruitful to analyze the size of the coefficients, as opposed to the value of R-squared which is often inflated by unit effects held constant over time (Wooldridge, 2002).

**Table 4.6.** Fixed Effects Results for Model Three: Policy Outputs ( $n = 150$ ).

|                              | Coefficient | Standardized Coefficient | Robust Standard Error | <i>t</i> | <i>p</i> |
|------------------------------|-------------|--------------------------|-----------------------|----------|----------|
| Descriptive Representation   | -.1987      | -.0982                   | .4264                 | -.47     | .643     |
| Political Party Influence    | -.0873      | -.0681                   | .1375                 | -.64     | .528     |
| Women's Caucus               | -.0529      | -.0992                   | .0581                 | -.91     | .367     |
| Citizen Ideology             | .0026       | .1394                    | .0021                 | 1.21     | .232     |
| Gender Opportunity Structure | .0079       | .0386                    | .0451                 | .17      | .862     |
| Constant                     | .3341       |                          | .1538                 | 2.17     | .035*    |

Note: Adjusted  $R^2$  .6162,  $F(5, 145) = .90$ ,  $p = .4818$

Two-tailed  $p$  values, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Due to the fact that all of the coefficients failed to reach statistical significance, one cannot make inferences concerning the relationship between the predictor and outcome variables. In regards to Model Three, we fail to reject the null for all five hypotheses. However, there is still value in examining the size and effect of each of the coefficients.

The hypothesized relationship for all five variables is positive, yet the coefficients for descriptive representation, party control and women's caucus are negative. This counters the hypothesized relationship based upon current research. The coefficient for descriptive representation is sizeable, especially in comparison to the other four variables, which are quite small. The coefficients for citizen ideology and gender opportunity structure are positive, as hypothesized, yet statistically insignificant. Additionally, the size of the coefficient for both variables is quite small indicating a weak relationship.

### Summary

Chapter Four presents the results for the descriptive statistics, correlations, and fixed effects analysis. The results for the three fixed effects models revealed inconsistent, and, largely, insignificant results. Only two variables reached significance across all three models. This includes descriptive representation in Model One and citizen ideology in Model Two. Table 4.7 displays a summary of the results for the hypotheses.

Table 4.7. Summary Results of Hypotheses Tests.

|                                               | Model One:<br>Policy Priorities | Model Two:<br>Policy Preferences | Model Three:<br>Policy Outputs |
|-----------------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| H <sub>1</sub> : Descriptive Representation   | Reject Null                     | Fail to Reject                   | Fail to Reject                 |
| Predicted Relationship/<br>Outcome            | Positive/Yes                    | Positive/Yes                     | Positive/NO                    |
| H <sub>2</sub> : Political Party Influence    | Fail to Reject                  | Fail to Reject                   | Fail to Reject                 |
| Predicted Relationship/<br>Outcome            | Positive/Yes                    | Positive/NO                      | Positive/NO                    |
| H <sub>3</sub> : Women's Caucus               | Fail to Reject                  | Fail to Reject                   | Fail to Reject                 |
| Predicted Relationship/<br>Outcome            | Positive/Yes                    | Positive/No                      | Positive/No                    |
| H <sub>4</sub> : Citizen Ideology             | Fail to Reject                  | Reject Null*                     | Fail to Reject                 |
| Predicted Relationship/<br>Outcome            | Positive/No                     | Positive/No                      | Positive/Yes                   |
| H <sub>5</sub> : Gender Opportunity Structure | Fail to Reject                  | Fail to Reject                   | Fail to Reject                 |
| Predicted Relationship/<br>Outcome            | Positive/No*                    | Positive/Yes                     | Positive/Yes                   |

\* True only after outliers with undue influence are removed from the model.

These results counter the literature and the hypothesized relationships, resulting in interesting interpretation and analysis, which will be discussed at length in Chapter Five. These results also limit the ability to make inferences based on the predictor and outcome variables. However, there is ample room for analysis in investigating potential solutions and answers for the contradictory results. The following chapter provides a thorough discussion.

## CHAPTER FIVE:

### DISCUSSION

Chapter Five presents an in-depth discussion of the statistical results reviewed in the preceding chapter. This chapter is organized according to the five hypotheses tested in this study. Each section discusses a hypothesis across all three statistical models. This is followed with a discussion of the implications, as well as suggestions for future research.

#### Hypothesis One: Descriptive Representation

The first variable of interest is descriptive representation. This variable is operationalized as the percent of seats held by women in the lower chamber of the state legislature, measured as a percent of the total. The relationship between descriptive and substantive representation is the most commonly researched link found within the literature, yet research has produced mixed results (Beckwith & Cowell-Meyers, 2007). This study sought to expand the literature regarding the association between descriptive and substantive representation, by studying the variable at the macro level, and outside the boundaries of critical mass. The first hypothesis tested is as follows:

H<sub>1</sub>: State legislatures that have more female legislators will have higher rates of substantive representation of women.

Table 5.1 offers a review of the results across all three models. Descriptive representation was significant ( $p < .10$ ) in predicting the change in policy preferences, holding all else constant. This statistical strength of the coefficient improved when the outliers with undue influence were removed from the equation ( $p < .05$ ), but the size and effect of the coefficient largely remained the same. For a given state, as descriptive representation varies across time by one percent, policy priorities increases by .04 percent, holding all else constant. In regards to Model One, we reject the null hypothesis. This result reinforces the theory that there is an association between descriptive and substantive representation, but Models Two and Three confound these results.

**Table 5.1.** Summary Results of Hypothesis One.

|                                             | Model One:<br>Policy Priorities | Model Two:<br>Policy Preferences | Model Three:<br>Policy Outputs |
|---------------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| H <sub>1</sub> : Descriptive Representation | Reject Null                     | Fail to Reject                   | Fail to Reject                 |
| Predicted Relationship/<br>Outcome          | Positive/YES                    | Positive/YES                     | Positive/NO                    |

Model One resulted in a statistically significant, positive coefficient for descriptive representation. Model Two resulted in a smaller, positive coefficient that failed to reach statistical significance. Model Three resulted in a statistically insignificant, negative coefficient. The results reveal that as the policy process

progresses the impact that descriptive representation has on substantive representation becomes statistically insignificant, and eventually negative, holding all other variables constant. This may be a result of a number of factors not taken into account in the research design. The following section returns to the literature in an attempt to explain the contradictory results.

### *Critical Analysis*

Recall from the literature review that research on the direct link between descriptive and substantive representation consistently produces mixed results (Bratton, 2002; Kathlene, 1994; Saint-Germain, 1999; Thomas, 1991, 1994). Some research indicates that policy entrepreneurs are the key to substantive representation (S. Carroll, 1984; Chaney, 2006; Childs & Krook, 2005, 2009). Others argue that a critical mass of women is necessary to enact change (Bratton, 2005). Alternatively, it is theorized that the substantive representation of women carries fewer consequences with less stringent rules earlier in the policy process (King, et al., 2005). In fact, it has been found that women are more often substantively represented at earlier stages of the policy process where problems are defined, the agenda is set, and bills are sponsored (Bratton, 2002; Tamerius, 1995). These results support this claim.

The relationship between descriptive and substantive representation of women begins to wane once a bill reaches the final vote in the lower chamber (Policy Preferences). Holding all other variables constant, descriptive representation does not affect substantive representation at a statistically significant level. The relationship



here was still positive, but was not statistically significant ( $p = .64$ ). The standardized coefficient shows a smaller effect than in the first model. There are a number of extenuating circumstances that may impact roll-call votes (Swers, 2002a). Because of this, it is often considered a necessary evil – a common measurement fraught with problems.

The results reveal that once a bill has been vetted in committees, it receives support across gender and political parties during the second and third stage of the policy process, as measured here. This also reveals that active substantive representation occurs during the earlier stages of the policy process. However, this relationship wanes once a bill reached the final vote. This could be because a share of the women in office are Republican, and do not support specific legislation that has been coded as substantive representation. This includes reproductive rights, insurance regulation, and social welfare policies, just to name a few. To test for this, it would be helpful to break descriptive representation into two variables – Democrat and Republican.

This also speaks to one of the major critiques of descriptive representation and critical mass – essentialism. To assume that all women will uniformly support a feminist political agenda does not honor the vast social, cultural, political and demographic differences of each individual and the resulting differences in policy preferences. In addition, it is logical to assume that these policy preferences vary not

just across individuals, but also across states and over time (Bratton, 2002; Reingold, 2000).

This may be explained with a more nuanced definition of substantive representation. Within this research design substantive representation is defined as women's interest legislation based upon the work by Bratton (2002) (see Appendix A). This broad definition was meant to encompass a wide range of interests, but it may be fruitful to either narrow the scope or to create sub-categories of women's interest legislation such as reproductive rights, health policy or violence against women, to name a few. This would illuminate the types of women's interest legislation that are more amenable or conducive to the substantive representation of women, not just in relation to roll-call voting, but across all stages of the policy process.

Lastly, the relationship between descriptive representation and substantive representation within Model Three (Policy Outputs) is negative and statistically insignificant. The standardized coefficient also reveals a much smaller association between the two variables, as opposed to Models One and Two. Consider the meaning of the modeled relationship. As descriptive representation increases, the substantive representation of women decreases, holding all other variables constant. Here, substantive representation is measured as the percent of women's interest legislation that passed the lower chamber. Reiterated in terms of measurement, as the percent of women holding office in the lower chamber increases, the percent of

women's interest legislation passing the lower chamber decreases. The negative sign on the coefficient may be a result of a variety of factors, all valuable for future research. For example, the first includes a possible backlash by male legislators *and* female legislators as a result of an increase of women, where female legislatures are devalued by their peers (Kanthak & Krause, 2010). This supports the theory that the token female legislature will be more effective in substantively representing women, than a large increase of descriptive representation of women. This also might explain the way in which the relationship between descriptive and substantive representation weakens throughout the policy process.

The second possibility not considered in this research design includes the effectiveness of elected women. Some theorize that there will be a decrease in the effectiveness of women as the number of women increases (Childs & Krook, 2009). Not all groups of women will be equal in regards to power and experience, especially as tenure, committee leadership, and professional experience, amongst other factors, varies by woman and by state legislature. Research shows that these variables contribute to the effectiveness of women in office (Thomas, 1994). Consideration of these factors may produce a measure of descriptive representation that does a better job in predicting the variance in substantive representation. This could be tested by creating a composite measure that couples descriptive representation with the aforementioned variables to create a variable that is a measure of both numbers and women's aggregate power (Cammisa & Reingold, 2004; Norrander & Wilcox, 1998).

In summary, within this model an increase in descriptive representation led to a statistically significant increase in policy priorities; however, it did not lead to a statistically significant relationship in regards to policy preference or policy outputs. In regards to policy outputs, the relationship was negative. These contradictory results may be a result of a number of factors, including differences in Republican and Democratic female legislators, a more nuanced definition of women's interest legislation, a backlash effect, and the collective effectiveness of female legislators. While the results for the first hypotheses are not clear and concise, they do present a number of interesting puzzles that lend themselves to future research.

#### Hypothesis Two: Political Party Influence

The second variable of interest is political party influence. This variable is operationalized as the share of seats held by the Democratic Party in the lower chamber of state legislatures, and is measured as a percent of total. Research indicates that consideration of legislative factors is important when analyzing substantive representation of women (Reingold, 2000; Swers, 2002a). Further, research also documents a strong relationship between women's interests and the left-wing political party (Beckwith & Cowell-Meyers, 2007). Analysis of political parties and substantive representation allows one to determine whether the number of seats held by the Democratic Party is related to the substantive representation of women (Beckwith & Cowell-Meyers, 2007). Study of the relationship between political party and substantive representation is not common and is a significant contribution

to the literature (Cammisa & Reingold, 2004; Sanbonmatsu, 2008b). The hypothesis for this variable is as follows:

H<sub>2</sub>: State legislatures that have a greater Democratic majority will have higher rates of substantive representation of women.

Table 5.2 displays the results for Hypothesis Two. One can see that the coefficient for political party influence failed to reach significance in all three models, and we fail to reject the null hypothesis for all three models. The standardized coefficient reveals that the association between political party influence and substantive representation is quite small in all three models, but of the three, is the strongest in Model Two. Further, while the hypothesized relationship is positive for all three models, the coefficient was only positive for Model One, policy priorities. This indicates that as the share of seats held by the Democratic Party increases, so too does the percentage of women's interest legislation introduced in the lower chamber during the regular session. However, the direction of the relationship within Models Two and Three are negative, indicating an inverse relationship between the share of Democratic Party seats, roll-call votes, and the bill passage rate of women's interest legislation.

**Table 5.2.** Summary Results of Hypothesis Two.

|                                               | Model One:<br>Policy Priorities | Model Two:<br>Policy Preferences | Model Three:<br>Policy Outputs |
|-----------------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| H <sub>2</sub> : Political Party<br>Influence | Fail to Reject                  | Fail to Reject                   | Fail to Reject                 |
| Predicted<br>Relationship/<br>Outcome         | Positive/YES                    | Positive/NO                      | Positive/NO                    |

*Critical Analysis*

The results require a return to the literature in hopes of making sense of the statistically insignificant and contradictory results. The use of Democratic Party share is valid and thoroughly documented in the literature. Model One reinforces this relationship, but Models Two and Three are contentious.

When using this predictor variable, one must be mindful of both space and time. This research design utilizes observations from all 50 states for the years 1995 and 2005 and 25 states for the years 1975 and 1985. Across states and over time the meaning of the two major political parties changes and evolves. One can see evidence of this with the alignment of women's interests with a major political party, as it shifted from the Republican Party in the 1950's to the Democratic Party in the 1970's (McGlen & O'Connor, 1998; Wolbrecht, 2002).

Variation across states is also clearly documented by Erikson, Wright and McIver (1989) who note that there is a great deal of variability between states in

regards to political party and political ideology. As an example, the authors illustrate vast differences in ideology across states by comparing the Democratic Party in Mississippi versus the Democratic Party, or even Republican Party, in New York State. Given this example, one can clearly see how this may confound results, as the ideology of the Democratic Party changes from state to state *and* over time (Besley & Case, 2003). This is especially relevant given the common slate of women's interest legislation, which typically falls to the far left of the political spectrum. Due to this, alignment of women's interest legislation and the Democratic Party may not be a natural alliance depending on the state and time period.

This variation demands attention. The results of this analysis reveal that political party, specifically the Democratic Party, is not a good predictor variable when analyzing substantive representation of women. Existing research demonstrates that vast differences in the Democratic Party across both space and time may require additional measures of party and ideology. Additionally, the original model proposed by Beckwith and Cowell-Meyers (2007) warned that a measure of the left-wing party may require not just the number of seats held, but also the political position of the party. Fortunately, a measure exists that varies across state and time focusing on government ideology (W. D. Berry, et al., 1998). Inclusion of both Democratic Party share and a measure of government ideology, either separately or as an interaction term, may improve the results for a similar hypothesis.

Finally, the hypothesized relationship across all models is positive given the documented relationship between women's interest legislation, the women's movement and the Democratic Party. As discussed with descriptive representation, this may be due to the fact that there is greater freedom earlier in the policy process. However, the negative coefficients from Models Two and Three indicate that other dynamics may be at play. Perhaps it is a matter of state by state and year by year differences in party ideology. Alternatively, the relationship may be a matter of competition.

Recall from the review of literature that research on gender and political parties either view descriptive and substantive representation of women in concert with political parties or in opposition to political parties (Sanbonmatsu, 2008b). This research design employed a hypothesis supporting the former, in regards to the Democratic Party, but resulted in insignificant and contradictory results. This demonstrates that the alignment of the Democratic Party and substantive representation of women is not a given, and consideration of a contrarian relationship may be necessary. This might explain the negative coefficient for Models Two and Three.

Consideration of the opposition hypothesis brings up a number of questions. Despite the alignment of the women's movement with the Democratic Party, does the Democratic Party constrain the substantive representation of women? What type of, if any, women's interest legislation is placed at the top of the party agenda?



Additionally, many types of women's interest legislation are controversial and polarizing. Perhaps, as mentioned earlier, a more refined definition of substantive representation of women, including sub-categories of women's interest legislation, would illuminate the "types" of substantive representation that are more palatable to the Democratic Party, at large. The success of different categories of women's interest legislation may vary with not just the number of seats held by either party, but also by the ideology of the political party, as discussed previously.

The results for Hypothesis Two were insignificant with signs that contradict the hypothesized relationship. Because this variable is not commonly studied as a direct predictor of substantive representation, one may conclude that Democratic Party share, controlling for other variables, does not significantly predict the variation in substantive representation. However, existing research demonstrates that alternative hypotheses may explain the results. This might include a measure of government ideology, in addition to party representation. It may also be beneficial to consider political parties as constraints on substantive representation. The next section focuses on the third hypothesis.

#### Hypothesis Three: Women's Caucus

The third variable of interest is women's caucus. This variable is operationalized as the presence of a formal women's caucus within in each state legislature. The variable is a dummy variable where 1 indicates the presence of a caucus. The women's caucus is considered a tool within the legislative process that

enables women to form a unified block of voters and to advocate for substantive representation (Mahoney, 2011; Thomas, 1991). Analysis of the relationship between women's caucuses and substantive representation in state legislatures is quite limited with preliminary research indicating a relationship between the presence of a caucus and substantive representation (Mahoney, 2011; Thomas, 1994). The hypothesized relationship is as follows:

H<sub>3</sub>: State legislatures that have a women's caucus will have higher rates of substantive representation of women.

Table 5.3 displays the results for the third hypothesis. One can see that the coefficients failed to reach significance in all three of the models, failing to reject the null hypothesis. The standardized coefficients reveal a small association between women's caucus and substantive representation. Of the three models, the association within Model Two was the smallest.

Further, while the predicted relationship was positive for all three models, only the coefficient for Model One was positive. The positive coefficient for Model One indicates that the presence of a women's caucus results in an increase in the number of women's interest legislation introduced in the lower chamber during the regular general session. Yet, the direction for the coefficient for Models Two and Three is negative, indicating that the presence of a women's caucus is negatively related to substantive representation of women.

**Table 5.3. Summary Results of Hypothesis Three.**

|                                       | Model One:<br>Policy Priorities | Model Two:<br>Policy Preferences | Model Three:<br>Policy Outputs |
|---------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| H <sub>3</sub> : Women's Caucus       | Fail to Reject                  | Fail to Reject                   | Fail to Reject                 |
| Predicted<br>Relationship/<br>Outcome | Positive/Yes                    | Positive/No                      | Positive/No                    |

*Critical Analysis*

There are a number of factors that may have impacted the results. First, the nature of fixed effects analysis requires variables that vary over time. Variables that do not vary over time are removed from the regression equation. Recall that when variables are demeaned, the value for the variable for each observation is subtracted from the unit mean. In a number of cases the women's caucus variable did not vary, meaning that the value on the variable was either 0 or 1 for all time periods. When you subtract a mean of 1 from 1, the observation will then be zeroed out. This limited the variation of the independent variable, which, in turn, may have affected results. Due to the nature of the estimator, the women's caucus variable may not be the best measure of women's institutional strength.

A more appropriate measure of women's institutional strength might include a broader view of the contextual environment. For example, a composite measure that includes not just the presence of a women's caucus, but also the existence of a state

women's commission may be fruitful. One could also include a measure of the number of women holding elected positions in executive office<sup>8</sup>.

A composite measure may provide a better measure of institutional power within each state. The Institute for Women's Policy Research uses a similar composite measure when figuring political participation within each state (Werschkul & Williams, 2004). Also, in constructing a composite index one would move from a dummy variable to an ordinal or continuous variable, introducing more variation within the research design. This is especially important when analyzing panel data with fixed effects analysis.

Results for the Models Two and Three reveal that the presence of a women's caucus does not significantly predict the variation in the substantive representation of women, when measured as roll-call votes or policy outputs. In fact, the coefficients indicate that the presence of a women's caucus results in a decrease in both the average aye votes, as well as the percent of women's interest legislation passing the lower chamber.

The results from Models Two and Three also reinforces a pattern where the legislative factors produce a positive coefficient for Model One, but then become negative at later stages of the policy process. This supports the idea that legislators have more freedom at earlier stages of the policy process to substantively represent

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<sup>8</sup> Includes Governor, Lieutenant Governor, Secretary of State, Attorney General, State Treasurer, State Auditor, Commissioner, to name a few (CAWP, 2011b).

women. This could also provide evidence of the difficulty of advancing women's interest legislation at later stages of the policy process, or provide evidence of a backlash effect.

Previously, the idea of a backlash was discussed in relation to descriptive representation. This may also apply to the formation and presence of a women's caucus. Recent research regarding women's caucuses in state legislatures found that a curvilinear relationship exists between a women's caucus and the descriptive representation of women in committee leadership positions. When the number of women within a state legislature is of a moderate level (10%-30%), the benefits of the caucus are statistically significant. However, these benefits disappear when the level of descriptive representation is less than 10% or greater than 30% (Kanthak & Krause, 2010). This may account for the contradictory results found within Models Two and Three, but let it be noted that visual plots of the variables did not provide evidence for anything other than a linear relationship.

In summary, we fail to reject the null hypothesis for all three models. These results demonstrate the need for alternative specifications regarding the role of women's caucuses and women's institutional power. This may be a result of the nature of the data and the fixed effects estimator, or it may also be a result of a more complex relationship between the women's caucus and substantive representation. Lastly, a more sophisticated operationalization of women's institutional power may also result in different findings.

#### Hypothesis Four: Citizen Ideology

The fourth variable of interest is state citizen ideology, which measures citizen ideology across states and over time on a conservative to liberal spectrum.

Consideration of citizen ideology is necessary when analyzing the policy process within the 50 states (Erikson, et al., 1993). Scholars have determined that public ideology and attitudes concerning gender relations are strongly and significantly correlated (Arceneaux, 2001; Thomas, 1994). Further, research documents a link between citizen ideology and policy outputs (Arceneaux, 2001; Scola, 2006), as well as a relationship between citizen ideology and descriptive representation (Erikson, et al., 1993). Yet, few have analyzed the association between citizen ideology and substantive representation (Cammisa & Reingold, 2004; Childs & Krook, 2009). As a result, the fourth hypothesis is as follows:

H<sub>4</sub>: States that have a more liberal citizen ideology will have higher rates of substantive representation of women.

Table 5.4 offers the results for the fourth hypothesis across all three models.

As one can see, we fail to reject the null for all three models. Also, while the hypothesized relationship is positive, only Model Three resulted in a positive coefficient. The standardized coefficients also reveal that the association between citizen ideology and substantive representation is the strongest within Model Three. The asterisk by Model Two indicates that the variable is statistically significant ( $p < .05$ ) when the outliers with undue influence are removed from the equation. For a

given state as citizen ideology increases across time by one unit, substantive representation decreases by .001 units, holding all else constant. Even so, the statistically significant coefficient is negative indicating a negative relationship between roll-call votes and a liberal citizen ideology. This contradicts the hypothesized relationship.

**Table 5.4.** Summary Results of Hypothesis Four.

|                                       | Model One:<br>Policy Priorities | Model Two:<br>Policy Preferences | Model Three:<br>Policy Outputs |
|---------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| H <sub>4</sub> : Citizen Ideology     | Fail to Reject                  | Fail to Reject*                  | Fail to Reject                 |
| Predicted<br>Relationship/<br>Outcome | Positive/No                     | Positive/No                      | Positive/Yes                   |

\* The null is rejected only after outliers with undue influence are removed from the model.

#### *Critical Analysis*

The citizen ideology coefficient within Model One was nearly zero, indicating little to no effect on the dependent variable, holding all other variables constant. As mentioned in the review of literature, legislators have a great deal of freedom during the early stages of the policy process (King, Cornwall & Dahlin, 2005). Given this, bill sponsorship may not be a direct function of citizen ideology, but, rather, a function of district characteristics, personal interests, and committee membership. to name a few (Hall, 1996). These factors may be better suited to predict substantive

representation of women at this stage of the policy process, as opposed to citizen ideology.

In regards to Model Two, the coefficient for citizen ideology is statistically insignificant and negative. The coefficient becomes significant when the outliers with undue influence are removed from the regression ( $p < .05$ ). This begs the question, what accounts for the negative relationship? The most obvious conclusion is that roll-call votes are not easily analyzed at the aggregate level. It is entirely possible that citizen ideology has an effect on roll-call voting behavior, but this relationship isn't easily observed when aggregated. Analysis of roll-call behavior with the individual as the unit of analysis allows for one to control for variables such as district characteristics and professionalism. As such, citizen ideology has a limited effect on the substantive representation of women at this stage of the policy process, within this research design.

Model Three produced a statistically insignificant positive coefficient. Here the coefficient is in agreement with the hypothesized relationship and existing research. The size of the standardized coefficient shows the largest effect for all three of the models. There is a dearth of research analyzing aggregate policy outcomes in relation to gender and representation (Cammisa & Reingold, 2004). This research design sought to fill this gap in the research by analyzing the relationship between citizen ideology and substantive representation, but the coefficients are small and the



results are not statistically significant. This implies that other variables may explain aggregate policy outcomes.

The results for Hypothesis Four produced contradictory and statistically insignificant results. Analysis of the relationship between citizen ideology and substantive representation of women is not common. This research design sought to fill the gap in the research by analyzing the direct relationship between citizen ideology and substantive representation. This is important for future research where citizen ideology may not be directly associated with substantive representation, but it may be ideal when looking at individual behavior. The next section discusses the fifth and final hypothesis.

#### Hypothesis Five: Gender Opportunity Structure

The fifth and final variable of interest is the gender opportunity structure. This variable is a composite measure of employment rates, educational attainment and marital status meant to encompass broad structural change throughout the past 40 years. A one unit increase indicates a more liberal gender opportunity structure. Few have analyzed the relationship between gender opportunity structure and substantive representation of women (McCammon, et al., 2001). This hypothesis seeks to address the documented gap in the research (Banaszak, 1996; Rosenfeld & Ward, 1991; Scott, 1986). As a result, the final hypothesis is as follows:

H<sub>5</sub>: States that have a more liberal gender opportunity structure will have higher rates of substantive representation of women.

Table 5.5 offers the results for the final hypothesis. Once again, the coefficient did not reach statistical significance, and we fail to reject the null hypothesis for all three models. The size of the effect decreases from Model One through Three, with a small effect size in Model Three. The hypothesized relationship across all three models is positive, yet the coefficient for Model One was negative. This indicates that as the gender opportunity structure increases, bill sponsorship of women's interest legislation decreases. However, the sign of this coefficient becomes positive when the outliers with undue influence are removed from the regression. The sign preceding the coefficient is positive for Models Two and Three, as hypothesized.

**Table 5.5. Summary Results of Hypothesis Five.**

|                                               | Model One:<br>Policy Priorities | Model Two:<br>Policy Preferences | Model Three:<br>Policy Outputs |
|-----------------------------------------------|---------------------------------|----------------------------------|--------------------------------|
| H <sub>5</sub> : Gender Opportunity Structure | Fail to Reject                  | Fail to Reject                   | Fail to Reject                 |
| Predicted Relationship/<br>Outcome            | Positive/No*                    | Positive/Yes                     | Positive/Yes                   |

\* The predicted relationship is positive after outliers with undue influence are removed from the model.

#### *Critical Analysis*

The literature review discussed the merits of the gender opportunity structure as an alternative measure of the women's movement. It was argued that broad social structural change was necessary to facilitate the women's movement, and to also

transform women into an important component of the constituency (Costain, 1992; Klein, 1988; Minkoff, 1997). The transformation of the social structure prompted mobilization and policy change. Subsequently, this created demand for favorable social policies that supported the new paradigm (Rosenfeld & Ward, 1991).

Based upon existing research the gender opportunity structure was comprised of three different measures – women’s participation in the labor force, educational attainment, and marital status. This composite variable was modeled after the composite variables created by the Institute for Women and Policy Research (Werschkul & Williams, 2004). In their research report IWPR graded states based on a number of composite indices including women’s political participation, employment and earnings, social and economic autonomy, reproductive rights, and health and well-being. Each composite index is comprised of four to ten measures, resulting in a fairly complex set of indices.

In comparison, the gender opportunity structure variable used in this research design is fairly simple, lacking the nuance found within the IWPR report. Duplication of the IWPR report within this research design is not feasible for all measures given the availability of historical data. Yet, there are merits to many of the measures used by IWPR. The development of a more complex gender opportunity structure variable may result in a variable that is more adept at predicting the variance in substantive representation.

Future research would benefit from a more nuanced analysis of the gender opportunity structure. This includes the development of a more sophisticated composite index, including women's rate of voter registration and voter turnout, business ownership, managerial and professional positions, and the number of women living above poverty level, to name a few. Alternatively, one could test the merits of a more sophisticated analysis by looking at the association between IWPR ratings for 2004 and the data collected regarding substantive representation for this research design for 2005.

Lastly, recall that the coefficient for Model One was negative indicating that as the gender opportunity structure became more liberal, bill sponsorship decreases. While this coefficient becomes positive when the outliers are removed from the regression, the negative coefficient is still worth consideration. Here the negative coefficient may be a product of circumstances within each state. Perhaps existing policies support women's economic, political, and health status, resulting in the perception that new policies are not necessary. Alternatively, the freedom found within this stage of the legislative process may result in less responsiveness to civil society contexts.

In summary, the gender opportunity structure variable offers interesting results that necessitate further research. We fail to reject the null hypothesis across all three variables. Future research would benefit from the development of a more complex composite variable measuring gender opportunity structure. The next

section offers a thorough discussion regarding the implications of this research design on theory and future research.

### Implications

The null findings for this study point to two obvious conclusions. First, model misspecification and Type II error are very real threats within this research design. Consideration of model misspecification and the threat of a Type II error has implications for the variables, unit of analysis, units of time and consideration of endogeneity, to name a few.

Alternatively, the model may be properly specified and the results correctly reported. If so, there are important implications for the non-findings including a discussion regarding alternative hypotheses and alternative causal models. The following section discusses the implications for both outcomes – model misspecification and/or Type II error and a properly specified model with null findings.

### *Model Misspecification & Type II Error*

Model misspecification refers to the inaccurate design of a research model, and it occurs when the model does not accurately explain the relationship between the explanatory variables and the dependent variables. Model misspecification may result from incorrect or missing variables, outliers, poor measurement of variables, and alternative functional forms between the dependent and independent variables.

Model misspecification contributes to biased coefficients and an increased chance in making a Type I or Type II error (Wooldridge, 2006).

In addition, other design elements of the model may have altered results, also increasing the chances of Type II error. Type II error refers to a false negative, or failure to reject a false null hypothesis. A Type II error is made when results indicate that a relationship does not exist, when, indeed, it does. Within this study, choices made regarding the unit of analysis, selection of time units, and endogeneity may have increased the threat of a Type II error. The non-findings within this study necessitate a discussion of model misspecification and Type II error. The following section discusses the implications of this study in light of model misspecification by reviewing the variables, unit of analysis, time periods, and endogeneity.

### *Variables*

*Independent Variables.* This study implemented a model proposed by Beckwith and Cowell-Meyers (2007), adapting the model to state-level research within the US. This required shifting the unit of analysis to the aggregate level in order to analyze how descriptive representation, political party, women's caucus, citizen ideology and the gender opportunity structure are associated with substantive representation of women. As indicated previously, the results reveal that these variables do not significantly predict the variation of substantive representation of women.

The inconsistent results point to possible model misspecification. A number of ideas were suggested above regarding the variables used within this research design. For many variables, this included a more nuanced and complex measurement of the variable. For descriptive representation this included a division of women according to political party, as well as the inclusion of a measure of aggregate gender-based power based upon tenure, committee membership, and leadership positions. For the political party variable, it was suggested that the inclusion of a measure of government ideology would allow for variation across states and over time. The women's caucus variable was also found to be overly simplistic, especially given the nature of the fixed effects estimator which demands variation over time. A more complex measure of institutional power may be appropriate and offer more variation over time. The same applies to the gender opportunity structure, which, in comparison to similar measures, is simplistic and may benefit from additional components within the composite index. This may include women's political participation such as voter registration and voter turn-out, as well as additional measures of women's professional status.

*Dependent Variables.* In addition, the dependent variables contribute to model misspecification or Type II error, as well. Substantive representation is an onerous term that is notoriously difficult to operationalize and measure. Definition of the term varies across the literature, with examples of common definitions including policies that mitigate or ameliorate gender-based discrimination (Bratton, 2002);

policies focused on women for either biological or socially constructed reasons (Lovenduski, 2001); policies that target women based on traditional roles as caregivers or other gendered divisions of labor (Swers, 2002a); and policies that include women as the target or the object of the policy.

A common critique regarding attempts to define substantive representation is the assumption that all women have a common slate of interests. This is considered to be essentialist, minimizing some sub-groups of women in favor of others (Mansbridge, 2003). It can also be argued that continuously looking for substantive representation within formal policymaking institutions does not pay heed to representation that happens outside of the formal arena such as social movements, nonprofits, or even the informal interactions that occur within institutions.

Analysis of substantive representation continues to produce mixed results. These mixed results indicate that comprehensive coding of substantive representation may be difficult, if not impossible. Creating a replicable framework, across states and over time, may be a difficult task with potential for failure. This may be due to the wide divide in ideological interests, as well as logistical constraints and complications with data collection.

Cowell-Meyers and Langbein (Cowell-Meyers & Langbein, 2009) recently studied the link between descriptive and substantive representation in 47 states. Their results were mixed, finding that an increase in descriptive representation led to an increase in substantive representation in relation to five out of 34 specific types of



policies. The authors concluded that measuring substantive representation as an aggregate number or as an index measure is rife with problems. As an alternative, the authors suggested that future research should focus on specific policy domains such as women's health policy, or specific types of policies of interest to women such as mandated insurance coverage of breast reconstructive surgery after a mastectomy. In such a study the researcher would assess each state to determine if specific legislation exists in that state. Alternatively, the authors state that it would also be beneficial to operationalize substantive representation as women's quality of life indicators, as opposed to a policy outputs or a stage of the policy process. In doing so, one removes a large portion of the ambiguity from the term, which would improve future research.

Changes to the measurement of a number of variables, as well as the addition of several variables may result in a properly specified model. This would reduce bias in the coefficients, as well as reducing the chances of making a Type I or Type II error. As such, the null findings should be viewed with caution given the problems with the choice of and measurement of the dependent and independent variables. The following section discusses the unit of analysis.

#### *Unit of Analysis*

By shifting the analysis from the micro level to the macro level, comparative state-level research is possible. Aggregate analysis of descriptive and substantive representation is not common, and is an oft-cited weaknesses within the literature (Bratton, 2005; Reingold, 2008). However, it is possible that modeling the

relationship between descriptive and substantive representation is not possible with a macro-level unit of analysis.

A careful review of studies specifically focusing on descriptive and substantive representation reveals that only a limited number of studies have used a macro-level unit of analysis (Barnello, 2001; Berkman & O'Connor, 1993; Cowell-Meyers & Langbein, 2009; Tolbert & Steuarnagel, 2001). Of these, Cowell-Meyers and Langbein (2009) were the only authors to successfully document a clear link between descriptive and substantive representation, and, in this case, the results were mixed. Those exploring the relationship with the individual as the unit of analysis were often much more successful (Poggione, 2004; Saint-Germain, 1989; Thomas, 1991, 1994).

The null findings within this study mirror existing results of similar studies found within the literature using a macro-level unit of analysis. Yet, these null results contradict studies using the individual as the unit of analysis. This discrepancy requires a closer look at all elements of the research design, including the unit of analysis. It is possible that research designs focused on the individual or a single piece of legislation would provide more conclusive findings regarding the link between descriptive and substantive representation. The next section discussed the time periods used within this research design and how the use of time within this model may have contributed to the inconsistent and contradictory results.

### *Time*

This study looked at four different time periods – 1975, 1985, 1995, and 2005. The fixed effects estimator examined variation of the dependent and independent variables within a unit across these four time periods. These time periods were initially chosen to capture variation in the descriptive representation of women as well as the variation in the independent variables. However, this research design was not constructed to measure change over time, and it fails to capture variation in the meaning of the constructs over time. In hindsight, variation across states would have introduced an ample amount of variation within the research design without extending data collection to the 1970's and 1980's. As a result, the selection of time periods may have confounded the results. As just one example, the varying nature of political parties, discussed earlier, shifts and changes across both states and time periods as does the state of women's policy in each state, but the research design fails to take this variation into consideration.

For example, the research model fails to consider the vast changes made within each state regarding women and public policy. While the fixed effects estimator controls for time-invariant unobservable characteristics unique to each state – such as region or culture – it does not control for time-variant characteristics. The present state of women's policy in each state is not static, and is not controlled for in this model. Yet, it may be related to the dependent variables. Failure to capture these

dynamics may have contributed to the null results or resulted in model misspecification.

This also raises the issue of endogeneity. Endogeneity refers to circular causality, or the idea that the dependent variable is a partial cause of one or several independent variables. Endogeneity is a threat within this study specifically in regards to descriptive and substantive representation. It is possible that changes in public policy opened the door for the descriptive representation of women. This, in turn, may cause an increase in the substantive representation of women. Failure to consider this circular causality in the research design may have resulted in model misspecification and Type II error.

Lastly, as discussed in Chapter Three, data for the dependent variables were collected using two different data collection procedures for the 1975 and 1985 time periods and the 1995 and 2005 time periods. While the data collection procedures were carefully crafted to reduce measurement error and to increase reliability, there is always a chance that measurement error was introduced based on the two primary sources of data for the dependent variables – LexisNexis State Capitol database and state legislative journals. This too may have affected the results of the research design.

Model misspecification and the threat of Type II error require future research to determine if the results are indeed biased or false negatives. Directions for future

research are found below. The following section focuses on the implications of a correctly specified model and a true negative.

### *Correct Model Specification & True Negative*

The research design employed in this study has a number of problems that may have contributed to model misspecification and Type II error. However, the model was developed based on solid research and a strong foundation of existing literature. As a result, it is imperative to include a discussion based on the assumption that the model is correctly specified and the results are accurate. This discussion focuses on two elements: a discussion of alternative causal models discussed within the literature review as well as the consideration of alternative causal models.

### *Alternative Hypotheses*

The insignificant results within this research design beg the question – do women represent women? The results of this study indicate that, if they do, the relationship is weak or spurious. Yet, others have used empirical methods to document a link between descriptive and substantive representation (Bratton & Ray, 2002; Dolan, 1998; MacDonald & O'Brien, 2011; Poggione, 2004; Saint-Germain, 1989; Swers, 1998; Thomas, 1991, 1994; Vega & Firestone, 1995; Wolbrecht, 2002). As such, the relationship between descriptive and substantive representation is not properly explained within this research design, but may be explained using alternative hypotheses. This provides justification for returning to the alternative hypotheses

discussed in the review of the literature, with a focus on policy entrepreneurs, tokenism and backlash hypotheses which have not received a lot of attention within the literature.

The critical mass hypotheses states that the number of women within a representative body must reach a “critical mass” in order to enact change (Dahlerup, 1988; Kanter, 1977b). This critical mass threshold is hotly debated and ranges from 15% to 35%. Others argue that as the levels of women increase, their effectiveness decreases as they lose their token status due to a backlash by both men and women in office (Kanthak & Krause, 2010). Alternatively, some contend that substantive representation is the work of a policy entrepreneur, where substantive representation of women will occur due to the efforts of one or a few individuals, regardless of the level of descriptive representation (Childs & Krook, 2009).

Preliminary data analysis, albeit anecdotal at this stage, provides evidence that a different relationship exists between descriptive and substantive representation. The relationship hypothesized within this research design focused on a positive, linear relationship. Yet, as discussed earlier, the direction of the coefficients point to a backlash. Backlash is defined as follows:

When a group of actors disadvantaged by the status quo works to enact change, that group necessarily challenges an entrenched power structure. The resistance of those in power to attempts to change the status quo is a “backlash,” a reaction by a group declining in a felt sense of power. (Mansbridge & Shames, 2008, p. 625)

Backlash could manifest within the electorate affecting voter turnout, female candidate success rates and vote shares. Backlash within the political institution may look like policy resistance to women's interest legislation or outright hostility to female representatives (Sanbonmatsu, 2008a). Backlash could be measured by success rates of women's interest legislation, as well as committee activity and floor remarks, and even the appointment of women to leadership positions. Here we would expect to see a negative relationship between descriptive representation and the aforementioned measures.

Few scholars have explored the idea of a backlash or empirically tested the backlash hypotheses (Sanbonmatsu, 2008a). The null findings within this study require looking at alternative hypotheses, and a theory of backlash may prove fruitful in understanding the relationship between descriptive and substantive representation of women in certain circumstances or at specific stages of the policy process.

Review of the data also supports the notion of women acting as policy entrepreneurs or as token groups. Here, substantive representation would not increase with descriptive representation but would depend on policy entrepreneurs or a small focused group of individuals engaging in "critical acts" (Dahlerup, 1988, pp. 276-277). As a result, the positive, linear relationship so often hypothesized would fail to produce consistent results, because it would depend on presence of policy entrepreneurs.

Childs and Krook (2009) advocate for future research that refocuses the lens on critical actors, as opposed to critical mass. This requires researchers to examine empirical questions by concentrating, “(1) not on *when* women make a difference, but on *how* the substantive representation of women occurs, and (2) not on what ‘*women*’ do, but on what *specific actors* do” (p. 143). This requires researchers to think outside the box regarding who represents women, and the ways in which this is done. It also requires a shift in the focus of representation from woman, to any actor regardless of gender or position.

The null findings within this study provide evidence that the link between descriptive and substantive representation does not exist, as measured with a positive, linear relationship. However, alternative hypotheses exist that reexamine the nature of the relationship between the two constructs. Exploration of these alternate hypotheses was beyond the scope of this research design, yet the dataset could be extended to address the competing hypotheses. In doing so, one could examine how each theoretical viewpoint fares using the same comprehensive dataset. This type of analysis has not yet been documented in the literature and may prove beneficial for future research.

#### *Alternative Causal Models*

The null results within this research design, combined with a history of mixed and insignificant results in similar research designs, require the consideration of alternative causal models. Two different models have potential to shed light on



substantive representation of women including the policy diffusion framework, as well as the social construction and policy design framework.

*Policy Diffusion.* The results of this study indicate that internal characteristics unique to each state are not related to the substantive representation of women. This requires looking at external determinants and their impact on the substantive representation of women. A well established vein of research rarely used in relation to substantive representation of women is the policy diffusion framework.

Policy diffusion is the adoption of policy innovation across governmental jurisdictions. Within the framework, policy diffusion is thought to occur as a result of both internal determinants and the channels of communication between states or countries (F. S. Berry & Berry, 2007). Diffusion is often studied across US states or between countries, and is theorized to be a result of policy learning, economic competition, imitation between states or countries, coercion by both the electorate and/or federal governments, and learning and emulation across states or countries (Karch, 2007; Nowlin, 2011). Common research questions regarding policy diffusion include the reasons why diffusion occurs, the political forces that assist in policy diffusion, and the elements of the policy that are being diffused (Karch, 2007).

These questions are relevant for the sub-field of gender and public policy. Scholars can investigate if substantive representation occurs due to descriptive representation or other internal determinants, as commonly hypothesized, or, as a result of forces that supersede state level characteristics such as economic

competition, state-level emulation and learning, or perhaps the national mood. All of these constructs may be related to the substantive representation of women, and may be integral in explaining the variation of substantive representation within states.

Policy diffusion may also occur as a result of specific political forces. Research questions looking at political forces within the diffusion literature should focus on national organizations, intervention by the federal government, or policy entrepreneurs at the state level (Karch, 2007). This aligns with current research regarding descriptive and substantive representation, where a focus on social movements and national organizations is common (Barakso, 2004; Costain & Majstorovic, 1994), as well as the emerging trend of study critical actors, not critical mass (Childs & Krook, 2009). Similar to this study, Karch (2007) advocates for looking at several stages of the policy process to determine the forces most relevant at different stages of the policy process. Lastly, it is also important to study which factors alter the content of public policy across states. In this type of study, policy content is the dependent variable (Karch, 2007). Here, when considering similar policy across states, we would be interested in why some states introduce and/or enact more generous or more restrictive women's interest legislation.

A limited number of articles exist that focus on policy diffusion and substantive representation. These articles are comparative in nature and focus specifically on the diffusion of gender quotas (Krook, 2008) and gender mainstreaming organizations (True & Mintrom, 2001). In both cases, the authors

found that international norms and transnational organizations were the most significant factors facilitating diffusion across countries. These results are encouraging, and this leaves ample room for future research regarding substantive representation of women and the innovation and diffusion of public policy within the US.

*Social Construction and Policy Design.* The social construction and policy design framework concentrates on the political power and social construction of target populations in order to unravel the creation and implications of policy designs. Within this framework, the distribution of policy benefits and policy burdens is a direct result of a target group's power and social construction. In addition, the characteristics of policy designs feed forward to future policy designs, resulting in a lasting impact. The social construction framework fills a void in existing policy theories and frameworks by addressing the nature of power and inequality in relation to public policy (Ingram, Schneider, & deLeon, 2007; Schneider & Ingram, 1997).

The framework uses policy design both as dependent and independent variables (Schneider & Sidney, 2009). Framing policy design as a dependent variable requires researchers to consider how the power and social construction of specific groups alters the elements of policy design. Studying the policy designs of women's interest legislation is a fruitful avenue of research. It requires looking at sub-groups of women that vary in their social construction and power. This includes domestic violence survivors, welfare recipients, women with breast cancer, female business

owners, and female student athletes, just to name a few. As just one example, it would be fruitful to study how elements of the policy design vary across states according to the power and social construction of the sub-group within each state.

Framing policy design as an independent variable requires consideration of the feed forward effects of policy design. Schneider and Sidney (2009) state that the feed forward effects of policy designs require researchers to study how policy designs may create target groups; how policy designs use rules and the allocation of resources to disparately affect citizens; the ways in which policy designs entrench assumptions and stereotypes into both the political debate and the public's consciousness; and, lastly, how policy designs, through the messages they send as well as the rules they create, affect democratic participation.

In relation to the substantive representation of women, framing policy as the independent variable allows researchers to examine how variations in similar policy designs impact the target group across states. Alternatively, variations in the policy designs may create or change the target group favoring one "type" of woman over another with positive or negative results. The use of policy designs as independent variable would allow for analysis of future policy debate to study what messages are retained and conveyed over time. Lastly, study of policy designs as the independent variable allows for researchers to analyze their impact on women's participation in democracy, which may include running for election, holding office, and voter participation, to name a few.

The social construction and policy design framework's focus on normative elements of the policy process are especially suited for the study of substantive representation of women. As thoroughly documented within this Chapter, this study does not clearly reveal the circumstances that lead to the substantive representation. This framework may present an alternative causal model as to how and why women's policy varies within each state. Here the substantive representation isn't dependent upon just descriptive representation, which could be measured as political power, but also upon the social construction of women, generally, and sub-groups of women, specifically. The fusion of these two research streams has limitless potential.

The null results within this research design have strong implications for future research. Assuming a true negative, the results are a clarion call to turn to alternative causal models for explaining the substantive representation of women. These models have the potential to shed new light on the substantive representation of women. The next section synthesizes the information in this Chapter, offering several concrete suggestions for future research.

### Future Research

The literature examining the relationship between descriptive and substantive representation relies upon a key assumption: Women represent women. This relationship has been documented both qualitatively and quantitatively in existing research, yet an equally large collection of research provides mixed and contradictory

results. This growing body of research demonstrates that the link between descriptive and substantive representation is elusive and hard to define.

This study emulated existing research, and tested the hypotheses based upon the aforementioned assumption producing insignificant results. The null results within this study, and many others, challenge the assumption that there is a positive linear relationship between descriptive and substantive representation of women, as commonly assumed within the literature.

The empirical evidence demands that future research contest old assumptions and examine new questions. It is not longer appropriate to assume that women act for women. This assumption should be challenged by asking, who acts for women? This could be male or female, legislator, citizen, or bureaucrat, Democrat or Republican. Mixed results demonstrate that we should no longer assume that those that act for women neatly align with a single gender or a particular political party.

Another key assumption found within the literature and implemented within this study is that substantive representation of women should be defined in relation to a progressive, feminist policy agenda, measured as a stage of the policy process. This assumption introduces bias and ambiguity into research designs. The definition of substantive representation is critical to producing consistent results, yet it must be allowed to vary by woman, by women's groups, by municipality, state, region and country. Future research must not make a priori assumptions of substantive

representation. Rather, the construct must be analyzed respective of geographical, temporal, and ideological variation of women.

In regards to measurement, we should return to the drawing board to ask, what does it mean to act for women? The answers might include alternative measurements of substantive representation outside of the policy process, or even informal interactions within the policy process. Alternatively, as suggested by Cowell-Meyers and Langbein (2009), this may require measuring substantive representation based upon women's quality of life indicators. Future research should challenge the classic definition of substantive representation, as well as the common tools for measuring substantive representation.

In conclusion, this Chapter outlined a number of ways to improve the current research design, as well as several different avenues for future research. The Implications section of this chapter went into great detail outline empirical changes that may alter the results of this particular study and similar studies. The Implications section also detailed a number of alternative hypotheses and alternative causal models that may fare better in explaining the relationship between descriptive and substantive representation, or in predicting the substantive representation of women. Lastly, the current section detailed theoretical considerations for future research, specifically challenging the assumptions of who acts for women, how this action is defined, and what this action looks like. The following section offers a brief conclusion of this study.

## Conclusion

This study was designed to extend the literature regarding gender and representation. By adapting a model proposed by Beckwith and Cowell-Meyers (2007), the research design analyzed substantive representation as a function of descriptive representation, legislative factors, and civil society contexts. This research design analyzed these relationships across all 50 states for two time periods, 1995 and 2005, and across 25 states for two additional time periods. This resulted in comprehensive panel dataset measuring substantive representation of women at three different stages of the policy process at four different time periods.

The results reveal that the adaptation of Beckwith and Cowell-Meyer's model did not significantly predict the variance of the substantive representation of women. In fact, the results were often confusing and contradictory. Yet, they often left clues for future research. While this research design was not successful, changes to the independent variables, guided by the literature, may fare better in predicting the variance in substantive representation of women. Alternatively, the null results also indicate that alternative causal mechanisms are at play.

The representation of women in elected office is a matter of concern for any democratic state. The US continues to lag behind other industrialized countries in the level of representation of women in almost all government bodies. When women do hold elected office, scholars tend to question whether or not they also stand for women through their actions in elected office. This study took an important step



forward in analyzing an empirically unique model of representation within US states in order to determine the ways in which women are substantively represented throughout the policy process.

## APPENDIX A:

### WOMEN'S INTEREST LEGISLATION CODING FRAMEWORK

#### Health Concerns of Women:

- All health issues related to Breasts, Cervix, Uterus, and Ovaries
- Menstruation
- Fertility
- Reproduction- Obstetrics & Gynecology, Midwives, & other practitioners
- Pregnancy, Childbirth, and Adoption
- Breastfeeding
- Menopause
- Osteoporosis
- Insurance Mandates (Mother and Child)
- Mental Health - specific to women ie Postpartum Depression, Addiction

#### Social, Education, & Economic Status:

- Social & Political Status
  - Gender based discrimination in any venue ie Insurance, Housing, Credit, Employment, Education, Athletics, Military, etc.
  - Equal Rights in all venues ie Education, Workplace, as Citizens
  - Equal Rights Amendment
  - Women's Museums/Monuments
  - Task Forces/Commissions
  - Gender-biased statutory language
  - Marital Status - discrimination based upon
  - Corrections & Criminal Justice
- Education
  - Affirmative Action
  - Title IX
  - Equity
  - Discrimination
- Economic Status
  - Equal Employment Opportunity
  - Pay Equity
  - Separation & Divorce
  - Homemaker

- Primary Caregiver (Mother)
- Child Custody - not including jurisdiction
- Child Support & Spousal Support
- Childcare - provision of, funding for, tax cuts
- Employment Policies
  - Paid Leave
  - Paid Time Off Policies
  - Flexible Work Schedules
- Women Owned Business
- Women & the Military
- Widows (Surviving Spouse)
- Welfare (restricted to the following only)
  - Aid to Dependent Children (ADC)
  - Aid to Families with Dependent Children (AFDC)
  - Temporary Assistance to Needy Families (TANF)
  - Women, Infants, & Children (WIC)
  - Food Stamps
  - Pregnancy related Medicaid coverage

#### Political & Personal Freedom:

- Abortion
- Violence Against Women
  - Sexual Assault & Sex Offenders
  - Domestic Violence
  - Stalking
  - Trafficking
  - Female Genital Mutilation
  - Gender based Hate Crimes
  - Indecent Exposure
  - Prostitution & Exotic Dancing (decriminalization and regulation)

## APPENDIX B:

### LEXISNEXIS SEARCH TERMS

Each group of search terms is a query appropriate for use with the LexisNexis State Capitol database. The queries were developed from the list of applicable policies in Appendix A. The length of each query, in addition to the use of connectors and qualifiers, is specific to LexisNexis State Capitol.

#### General:

women OR woman OR gender

#### Health Concerns of Women:

childbirth OR maternity OR reproductive OR pregnancy OR pregnant OR midwi! OR Caesarean OR c-section OR cesarean Or prenatal OR postpartum OR postnatal OR post-partum OR post-natal OR breast!

birth control OR contracept! OR contraceptive OR cervical OR cervix OR ovar! OR uterus OR pap OR osteoporosis OR in vitro OR infertility OR menopause OR menstruation OR obstetrics OR gynecology OR pill OR hysterectomy OR sterilization OR tubal ligation

#### Social, Education, & Economic Status:

discrimination OR affirmative action OR equality OR equity OR women's rights OR Title IX OR pay equity OR wage gap OR pay inequity OR equal pay OR gender gap OR pay gap OR equal employment OR EEOC OR equal rights OR ERA OR equitable OR single-sex education

childcare OR child care OR family leave OR paternity OR mother OR child support OR spousal support OR alimony OR wife OR paternalism OR maternity leave OR paid sick days OR paid leave OR custody OR adoption OR spouse OR biological parent OR natural parent

birth mother OR primary caregiver OR married OR divorce OR widow

Temporary Assistance OR TANF OR Aid to Families OR ADC OR AFDC OR

personal responsibilities OR public assistance OR poverty OR food stamps OR WIC  
OR homemaker OR welfare AND NOT child welfare

Political & Personal Freedom:

abortion OR embryo OR fetus OR rape OR sexual assault OR sexual offense OR  
domestic violence OR domestic abuse OR family abuse OR spousal abuse OR  
stalking OR sexual harassment OR violence against women OR sexual offense OR  
sex

reproductive rights OR prostitute OR prostitution OR family planning OR headscarf  
OR female genital mutilation OR obscene OR pornography OR trafficking AND  
NOT drug trafficking

APPENDIX C:  
STATE SAMPLING & DATA COLLECTION

| State         | 1975 | 1985 | 1995 | 2005 |
|---------------|------|------|------|------|
| Alabama       | X    | X    | X    | X    |
| Alaska        |      |      | X    | X    |
| Arizona       | X    | X    | X    | X    |
| Arkansas      |      |      | X    | X    |
| California    |      |      | X    | X    |
| Colorado      | X    | X    | X    | X    |
| Connecticut   |      |      | X    | X    |
| Delaware      |      |      | X    | X    |
| Florida       |      |      | X    | X    |
| Georgia       |      |      | X    | X    |
| Hawaii        |      |      | X    | X    |
| Idaho         |      |      | X    | X    |
| Illinois      | X    | X    | X    | X    |
| Indiana       |      |      | X    | X    |
| Iowa          |      |      | X    | X    |
| Kansas        | X    | X    | X    | X    |
| Kentucky      |      |      | X    | X    |
| Louisiana     | X    | X    | X    | X    |
| Maine         |      |      | X    | X    |
| Maryland      | X    | X    | X    | X    |
| Massachusetts |      |      | X    | X    |
| Michigan      | X    | X    | X    | X    |
| Minnesota     | X    | X    | X    | X    |

|                |   |   |   |   |
|----------------|---|---|---|---|
| Mississippi    |   |   | X | X |
| Missouri       | X | X | X | X |
| Montana        | X | X | X | X |
| Nebraska       |   |   | X | X |
| Nevada         |   |   | X | X |
| New Hampshire  | X | X | X | X |
| New Jersey     |   |   | X | X |
| New Mexico     |   |   | X | X |
| New York       |   |   | X | X |
| North Carolina | X | X | X | X |
| North Dakota   | X | X | X | X |
| Ohio           | X | X | X | X |
| Oklahoma       | X | X | X | X |
| Oregon         | X | X | X | X |
| Pennsylvania   | X | X | X | X |
| Rhode Island   |   |   | X | X |
| South Carolina |   |   | X | X |
| South Dakota   |   |   | X | X |
| Tennessee      |   |   | X | X |
| Texas          |   |   | X | X |
| Utah           | X | X | X | X |
| Vermont        | X | X | X | X |
| Virginia       | X | X | X | X |
| Washington     | X | X | X | X |
| West Virginia  | X | X | X | X |
| Wisconsin      |   |   | X | X |
| Wyoming        |   |   | X | X |

## APPENDIX D:

### FIXED EFFECTS ASSUMPTIONS

Source (Wooldridge, 2006)

#### Assumption I

For each  $i$ , the model is

$$y_{it} = \beta_1 x_{it1} + \dots + \beta_k x_{itk} + a_i + u_{it}, t = 1, \dots, T,$$

where the  $\beta_j$  are the parameters to estimate and  $a_i$  is the unobserved heterogeneity.

#### Assumption II

There is a random sample from the cross section.

#### Assumption III

Multicollinearity: Each explanatory variable varies over time, and no perfect linear relationship exists between any of the explanatory variables.

#### Assumption IV

Strict Exogeneity: For each  $t$ , the errors are uncorrelated with the explanatory variables for all time periods and the unobserved effect is zero.

#### Assumption V

Homoscedasticity: The error variance is uniform for all values of the explanatory variables over time within a unit.

#### Assumption VI

Autocorrelation: The errors are uncorrelated for all explanatory variables over time within a unit.



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